Vol. III. No. 3. PRICE TEN CENTS.

THE LIBRARY OF CONGRESS,
TWO COPIES RECEIVED
APR. 12 1901
COPYRIGHT ENTRY
mar 12 1901
CLASS B XXa No.
5775
COPY B.

The Automobile

AN ILLUSTRATED MONTHLY JOURNAL.

Published at 150 Nassau Street.

NEW YORK, MARCH, 1901.

Copyright, 1901, by The E. L. Powers Co.

Entered at New York Post Office as second-class matter.

MR. GEORGE F. CHAMBERLIN OF THE A. C. A., IN HIS "GASMOBILE."

A Handsome Touring Carriage.

The handsome "Gasmobile" shown on the front page is a recent acquisition of Mr. George F. Chamberlin, late acting president of the Automobile Club of America. It is painted in red, and differs from the regular model in having a rumble seat. The motor develops ten horsepower.

The Club Acts on Excessive Speed.

The Board of Governors of the Automobile Club of America has passed the following resolutions:

Resolved, That driving automobiles by members of this Club at an excessive rate of speed on the public highways in disregard of the comfort and safety of other users of the common roads, be and the same is hereby strongly disapproved by the Club, as an injury to the sport and to a great industry; and that when members driving their automobiles meet the driver of a horse or horses which shall be restive or frightened, they shall on request or signal from such driver in all cases stop and use every effort and precaution to avoid the possibility of accident.

Resolved, Further, That any member of this Club who shall be found after a fair hearing to be guilty of driving at said dangerous and excessive speed on the public highways, and who shall have disregarded the comfort and safety of other users of the same by failure to stop when requested by the driver of frightened horse or horses, or who has been guilty of such conduct in the use of an automobile on the highways as shall tend to bring odium and reproach on this organization, shall be duly warned and suspended and upon repetition of such offense shall be expelled from this Club.

Damages Asked for a Runaway.

Louis W. Moore, of Watertown, N. Y., was sued by Dr. T. Royal Cook, of Ballston Spa, for damages resulting from a runaway at the latter place, the plaintiff's horse having been frightened by a steam carriage driven by the defendant. The accident happened when it was dark, and it was charged that the defendant was negligent in not stopping his machine when requested to do so that the horse might be led past. Instead of doing this, one passenger in the steam vehicle got out and held the horse's head while the machine was run past; but in spite of this the horse bolted.

The New York red-flag law, which requires that any steam vehicle of whatever sort be preceded an eighth of a mile by a man with a red flag or red light, was quoted by Justice Russell, who presided, as having a bearing in the case, though not as being in itself decisive, since the complaint was not brought on the ground of this law being ignored.

The jury rendered a verdict for the plaintiff in $200 damages.

The "Reading" Steam Carriage.

By Herbert L. Towle.

While most of the steam carriages lately put on the market are distinguished by their particular kinds and arrangements of "automatics," or by having no automatics at all, the Steam Vehicle Co. of America has produced a vehicle whose will ever be reached, but the makers of the "Reading" carriage have backed up their position with a machine which, granting decently good workmanship, ought to take care of itself with at as little grooming as any other that has yet appeared.

The engine, which is the most characteristic feature of the vehicle, is shown in

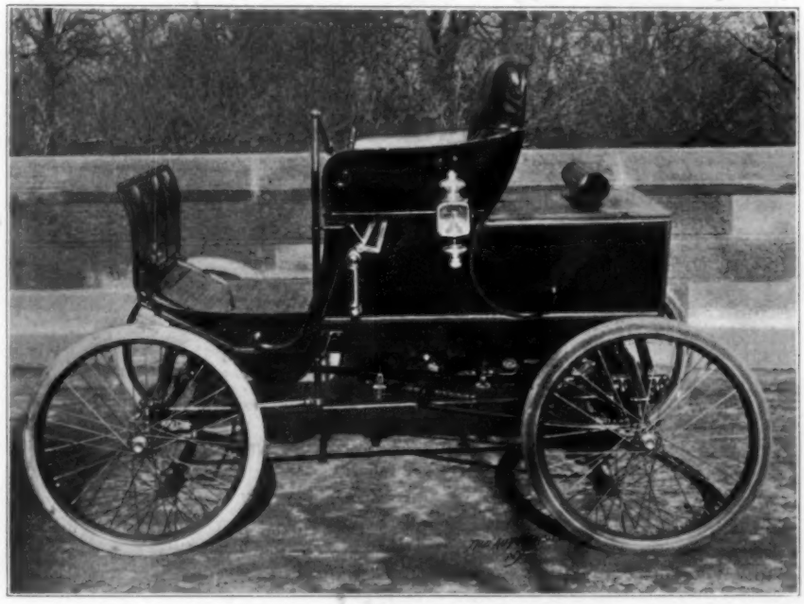


FIG. 1. THE "READING" STEAM CARRIAGE.

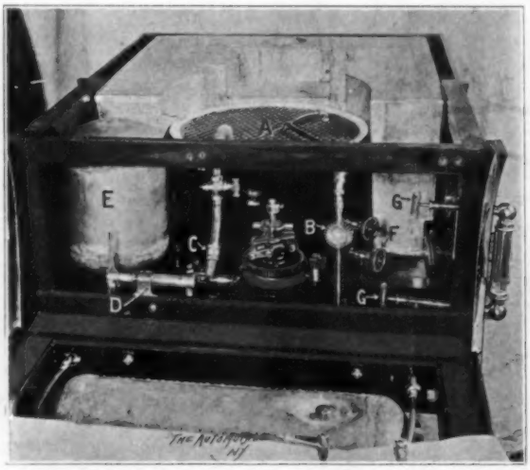


FIG. 2. INTERIOR OF THE CARRIAGE.

cardinal point is its mechanical simplicity. They argue—and not without some reason—that the unmechanical average man will sooner watch his water glass than tinker with a feed regulator; will sooner pump his air pressure by hand than risk getting oil into his gasoline from an air pump; will sooner pay a few cents a day more for gasoline than take the time and trouble to look after a double-acting engine, with stuffing boxes to leak and a link motion to wear and get loose. These are points on which probably no consensus of opinion

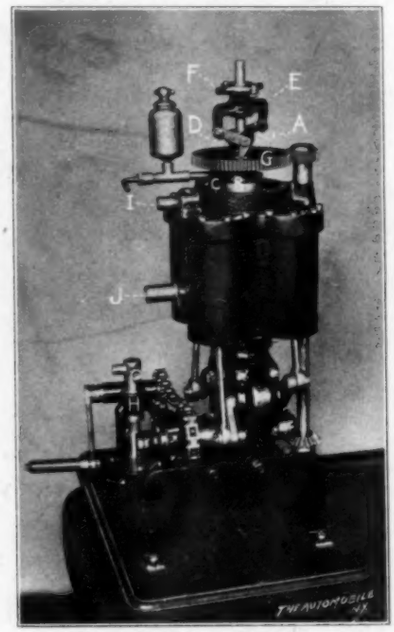


FIG. 3. THE ENGINE.

Fig. 3. It has four single-acting cylinders, 2½ inches bore by 3½ inches stroke, with trunk pistons, similar to those of gas engines. The connecting rods work in pairs on two crank shafts, and each of these shafts carries a steel pinion meshing

with a similar pinion on a sprocket shaft below and between the crank shafts. The cranks are all at 90 degrees, so that the sprocket shaft gets a fresh impulse at every quarter turn.

Instead of slide or poppet valves, a single rotary disk valve in the top of the engine distributes steam to all the cylinders. The upper part of this valve is seen at B in Fig. 3, where part of the steam chest cover C is cut away to expose it. Its lower part flares out, and its periphery is deeply notched by three ports through which the steam, entering on top of the valve by the pipe I, has access successively to four ports which communicate with the four cylinders. The bottom of the valve disk is recessed with three exhaust ports between the steam ports, and all of these connect with a central recess in the disk, by which the exhaust steam escapes to a cored passage between the cylinders, and so passes out by the pipe J. The valve is driven by the bevel and spur gears shown, and makes one revolution to three of the crank or sprocket shafts. Fig. 7 shows the arrangement in plan, and explains how the three sets of ports in the valve serve four cylinders. The heavy lines in this figure show the cylinder ports (a), the light lines the valve steam ports (b), and the dotted lines the exhaust ports (c) and connecting recess in the valve. Supposing that cylinder 1 is just taking steam, and that the crank of cylinder 2 is 90 degrees behind cylinder 1, it is evident that the valve will rotate ⅓ of 90 degrees = 30 degrees while the crank is moving 90 degrees; and, as the arc between the valve ports is 120° = 90° + 30°, it follows that the valve, turning clockwise, will give steam to cylinder 2 when the crank shaft has advanced 90° from the position shown. This being done, cylinders 3 and 4 follow in the same manner. The cylinder and valve steam ports are made of such width that steam is cut off at about ⅝ stroke.

It will be seen (Fig. 7) that if the valve be rotated forward through an angle a + b, or the sum of the steam ports (the crank shaft not being moved), it will give steam to cylinder 1 at the beginning of a stroke, with the engine running in the opposite direction; and this is the means used to reverse the engine. How this is accomplished may be seen from Fig. 3. The valve B is riveted to the central vertical stem, and the collar A, carrying the bell-cranks D, is keyed to the stem also, so that A and B turn together. The gear G is loose on the stem, but it has two sockets which receive the lower arms of the bell-cranks, and it drives the valve through the latter. The upper arms of the bell-cranks are slotted, and are held by the yoke E, which is also loose on the stem. It is evident, therefore, that (supposing gear G to be standing still) if yoke E be lowered, collar A will have to turn a little in a clockwise direction, because the lower ends of the bell-cranks are fixed, and vice versa. This turns the valve relatively to the gear and therefore to the crank-shafts, and thus reverses the engine. A split collar F on yoke E permits the latter to rotate with the valve. The yoke is shown in the reversing position, the ahead position being down. The rotation of valve for forward motion is

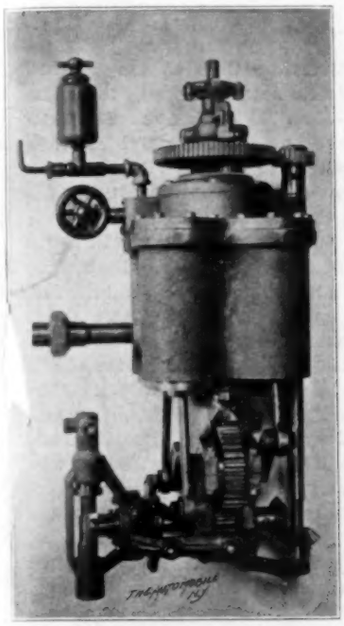


FIG. 4. THE ENGINE WITH GEARS UNCOVERED.

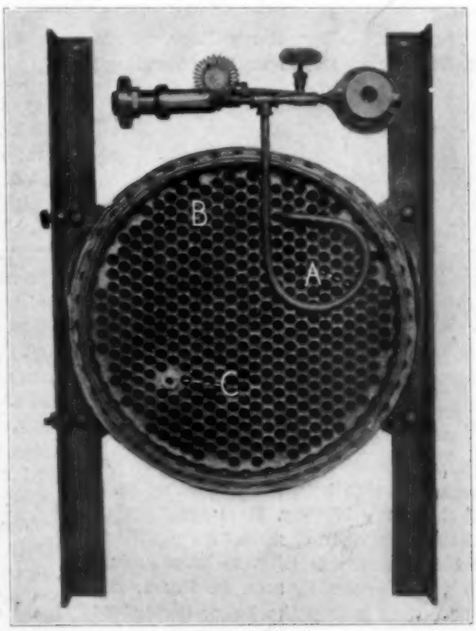


FIG. 5. BOTTOM OF THE BOILER.

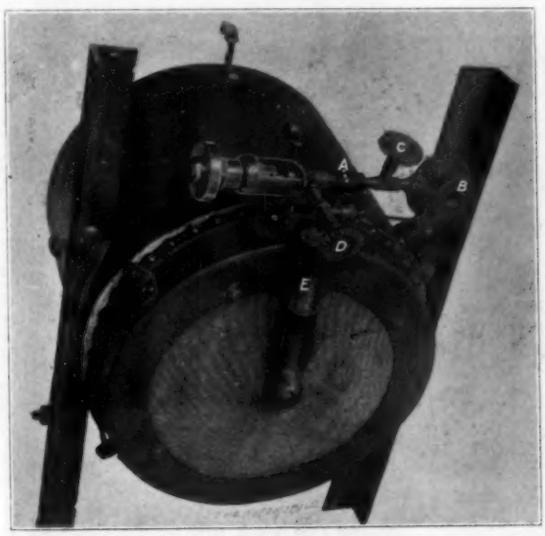


FIG. 6. THE BOILER AND BURNER.

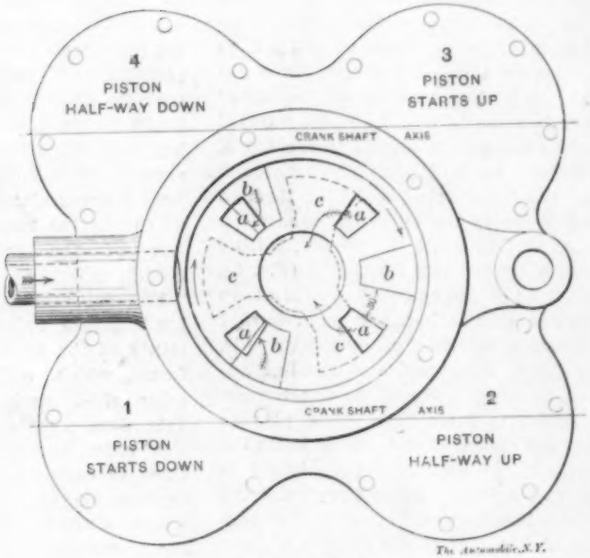


FIG. 7. THE VALVE IN PLAN.

counter-clockwise, and Fig. 3 shows the reversing position.

Of course in practice the valve is rotated through a somewhat less angle than a + b to reverse, and steam is admitted a little before the pistons reach the top of their stroke.

Evidently a valve such as the above cannot be used to give a variable cut-off, and nothing of the sort is attempted. This gives a chance to handle both reverse and throttle by one lever, and an ingenious combination of levers and cam plates, hardly possible to describe or even illustrate, but very simple in action, accomplishes this. The throttle is closed while the lever, in mid-position, is reversing the valve; and it opens when the lever is moved forward or back.

The boiler is of seamless drawn steel, 16 inches in diameter by 14 inches high, with the bottom "sheet" or head riveted in. It has 418 ½-inch tubes, and 60 square feet of heating surface. A fusible plug two inches above the bottom (see C, Fig. 5) protects it from burning in case the feed is neglected. Both boiler and engine are hung from transverse angle irons, and an expansion joint C (Fig. 2) in the steam pipe permits the engine to swing slightly in tightening the chain. No muffler is used, the exhaust steam being carried over the boiler and discharged downward between that and the tank through ten small pipes.

The most vital part of a steam carriage is the burner, and a thoroughly good burner is quite as much of a trick to evolve as an efficient vaporizer for a gas engine. A bottom view of the "Reading" burner is given in Fig. 6. From the fuel tank the gasoline is carried to the top of the boiler (see A, Fig. 2) down through one of the boiler tubes, and then through a loop of heavy tubing to the connection A (Fig. 6). To start the burner, a little alcohol is poured into the pan B (Fig. 6), where it heats the coil of fine tube above it. When this is hot, the main burner supply being still shut off by the valve D, the valve C is opened, and gasoline admitted in small quantity to the burner. The moderate flame thus given, playing on the fire coil A (Fig. 5), soon heats the latter, and, by the time the alcohol is burnt out, valve C can be closed and the regular valve D slowly opened. The regulator in Fig. 6 is of the usual kind, and the burner itself likewise, being a shallow drum pierced with air tubes, each of which is surrounded by pin-holes in the upper head for the escape of the vapor. A gauze sheet below protects it from air draughts. The bell-mouthed mixing tube E (Fig. 6) is telescopic and adjustable as to its distance from the vapor nozzle.

A small pilot light, located near B, Fig. 5, permits the main burner to be turned off by the valve B (Fig. 2) when the carriage is left standing. This keeps the boiler hot, and also the fire coil, so that the burner will start at once; while as the pilot flame does not play directly on the fire coil it does not tend to carbonize the vapor therein. The tube of the fire coil is very thick, and contains no gauze. In case liquid gasoline should be let into the burner, it drains out by the mixing tube E (Fig. 6), which is set sloping for that purpose.

Except for the burner regulator, no automatics are employed on the "Reading"

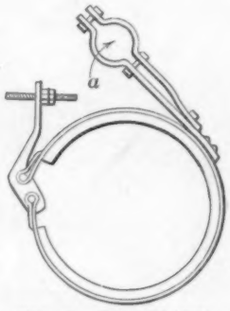


FIG. 8. THE BRAKE.

carriage. Instead of using a by-pass valve, the check valve between the water tank and the pump H (Fig. 3) is arranged to be held open when desired. An auxiliary hand feed pump D (Fig. 2) is provided. The gauge cocks F, seen in Fig 2, are tapped directly into the boiler instead of into a water column. Loss of steam by breakage of the gauge glass is prevented by the usual check valves, and hand valves G G shut off steam from these when the glass is to be replaced, thus allowing them to unseat. The brake is doube-acting, and of the form shown in Fig. 8, the jaws a being clamped to the top member of the rear axle.

Especial attention has been paid to flexibility of the underframe, which, while quite rigid against lateral movements of the axles, permits them to oscillate in vertical planes very freely. Unlike most steam carriages, the rear end of the body is hung on two transverse semi-elliptic springs, with the rear axle frame between them; and this necessitates a pair of light stay rods from the rear axle to the front of the body, as the transverse springs are not adapted to transmit sudden changes of speed from the wheels to the inert mass of the body. Steering is by side or centre lever, as preferred. Thirty-inch wheels, with 2½-inch tires, are used; the wheel base is 62 inches and the gauge 54 inches.

The total weight, with tanks filled, is close to 1,000 pounds, and about 700 pounds empty. The gasoline tank holds eight gallons, and the water tank twenty-eight. The consumption of water, in average running, is not far from one gallon per mile, and of gasoline one gallon in ten miles, which is not bad for an engine with fixed cut-off and a heavy machine.

New Quarters of the A. C. A.

The Automobile Club of America has moved into its new quarters in the Plaza Bank Building, 753 Fifth Ave. The location, at the corner of Central Park, is a most attractive one, and is also convenient to several storage depots. Besides the office, the rooms comprise a large reception room, a library, and a grill room. The first of these is decorated, both walls and carpet, in automobile red, and the furniture is upholstered in the same warm tint. Around the walls are many water colors and photographs of automobiles, and the windows afford an outlook on the Park, the Plaza, and the avenue. Dark green predominates in the library, and the grill room is Dutch in style, with blue wall paper, heavy black woodwork, and old-fashioned chairs and tables. Lockers are set in the further wall, a gas grill is at one end, and rows of steins and clay pipes on the walls carry out the general design.

Automobiles at the Pan-American Exposition.

It is probable that an automobile fete lasting one week will be a feature of the Pan-American Exposition in Buffalo next fall. The endurance test under the auspices of the A. C. A., from New York to Buffalo, will take place in September, the course ending in the stadium on the Exposition grounds. The fete will occur during or immediately after the endurance test. It is probable that arrangements will be made for a road race from Buffalo to Erie which will take place during the week. The distance is about 200 miles, and the course is one of the best in the United States.

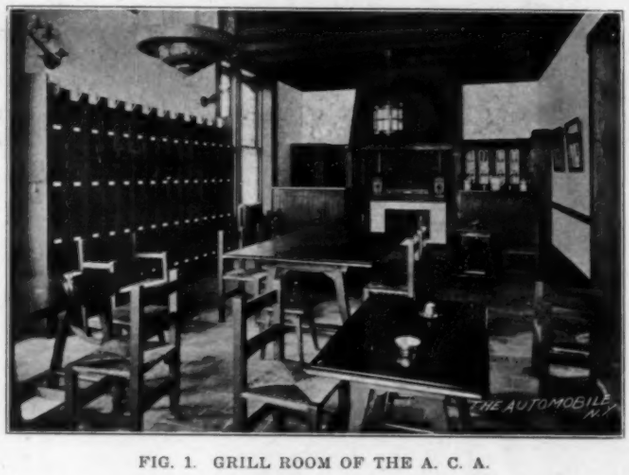


FIG. 1. GRILL ROOM OF THE A. C. A.

From New York to Boston by Steam Carriage.

By Mrs. F. P. Avery.

When, after long deliberation and much waiting, my husband and I found ourselves the owner of a horseless carriage, our one idea was to tour. To Boston was suggested and accepted.

Our first step was to secure all possible information, but we were obliged to rely mainly on the L. A. W. road maps, which at times led us where the side path was good but the road proper was torn up or sandy.

At last, with hamper and dress suit case packed, we started about noon on a beautiful August day.

Our trial trip was to New Rochelle via Kings Bridge, beyond which lies the rarely equalled Pelham road, speeding along which we realized with keenest pleasure the superiority of the steam carriage.

We reached New Rochelle in an hour and a half. As we had decided to remain there until the next morning we passed the afternoon in visiting Glen Island, Hunters Point and Davenport Neck.

Next morning, at ten, we left New Rochelle, but the day was disagreeable from a chilling drizzle. I was sorry, as we knew the beauties of the country thereabout, having a week before run out to Larchmont and Orient Point, riding through Mr. Flagler's beautiful grounds and down Mamaroneck Road. On this short trip, by the way, I had a few lessons in running the carriage, which in my opinion is most necessary for a woman and may save accidents if she is ever left alone in the carriage.

A woman should learn to use the brake; to start and to stop the engine; to reverse it, and also how to shut off the naphtha when the wind blows the fire out.

At times, when we had good free roads, I ran the carriage and my husband seemed to enjoy the rest.

About noon, when we had reached Port Chester, the sun did try to peek out and our way was made much more pleasant by it.

The country from New Rochelle to Bridgeport resembles a parkway with ever increasing beauties. I wonder that more New Yorkers have not taken advantage of this fine road.

I wanted very much to spend a few hours at Greenwich, but a punctured tire compelled us to steam ahead without delay to Bridgeport for repairs. It was well we did so, as a horse-shoe nail was found buried in a second tire. That the only puncture of our tires on the entire trip occurred on such good roads does seem remarkable.

Before leaving Bridgeport we enjoyed a delightful morning ride through Sea Side Park, which is considered the most beautiful park in New England. Ordinary roads prevailed thereafter to New Haven. Cobblestone streets detracted much from our visit to Yale College and other places of interest. The roads improved as we journeyed along the sea shore, stopping our carriage several times to enjoy the fascinating views. We passed many small summer settlements, "Heavens for the children," as a man informed us. That night, the third from New York, we spent at Branford Point. From Branford the roads are good but quite sandy. We passed next morning through Guilford, Conn., said to contain the second oldest house in the United States. After several accidents, like the loosening of the steering gear and the breaking of the water-glass, we reached New London in time for evening dinner.

FIG. 2. RECEPTION ROOM OF THE A. C. A.

Considerable work being necessary on the engine next morning we did not resume travel until noon. We then crossed the river to Croton, and had a perfect view of New London Harbor as we climbed up those hills; and then on through a sea of sand that in many places reached the hub. Many times we would stop for the engine to get up steam. Only the greatest care prevented accident, and with the afternoon only half spent we reached Quanochantong Beach. Owing to the state of the roads we deemed it advisable to go no further that day, fearing darkness would overtake us plowing through that sand. Quanochantong Beach is a most rural seaside resort, a sea of water and a sea of sand.

When next day we reached Wakefield without accident, after a terrific struggle through the sand, we were fully impressed with the excellence of our machine.

The roads from Wakefield to Narragansett Pier are well made. The run to Point Judith, where the many handsome cottages are, was enjoyable. From Saunderstown we took the ferry to Jamestown, across Jamestown the carriage was hauled by the bus, then ferry again to Newport. Let me stop to express my wrath at being obliged to draw off the naphtha before crossing on the ferry. There is no reason or sense in it. The discomfort and inconvenience experienced, not the loss of naphtha, make one indignant.

At Newport, in spite of previous sunshine at Jamestown, a severe and sudden rainstorm broke upon us just as we had fairly entered the place. There we were, at least there I was. Pushing the carriage well up into the road, my husband went to telephone for assistance to take up to hotel and shop. Men left their work to view the wonderful sight, and clerks were three deep at office windows. I heard one man say, "Ain't that worth rubbering for?" Women gaped so intently that they let their skirts drag in the mud and their umbrellas fall over their shoulders in the downpour, all enjoying the sight of a naphthaless steam carriage in a storm.

If Washington is a Heaven for bicycles Newport is a Paradise for steam carriages. The miles of ocean drives are very delightful, and never once during the three days we were in Newport was I ready or willing to leave the carriage. About two o'clock of our third day at Newport we started for Taunton by way of Fall River; the roads are excellent, except for a few miles approaching Fall River.

Fall River, by the way, is remarkable for charging forty cents a gallon for naphtha. During our trip we had no trouble in getting all the naphtha we wanted. The one disagreeable feature of our trip was the great crowds that would gather when we stopped for water or naphtha.

Our finest run, when the engine went at full speed, was along the boulevard entering Boston.

The Automobile Co. of America has an order for a number of fast gasoline machines of 18 h. p., which will be built on lines similar to the Panhard, with a 4-cylinder motor in front.

Which Takes the More Care—the Automobilist or the Horseman?

By Henry S. Chapin.

It was a red-hot day last August. The air was dead, but a cool breeze whistled round me—that may sound strange, but it isn't the only funny thing about an automobile. Skimming over Long Island's best macadam, the baby, enjoying the relief from the stifling heat, crowed with delight at the dogs which had found a new enemy to bark at. But the baby's smile lacked the fiendish joy that was mine when one persistent canine seized the end of the exhaust pipe in his teeth, and received sixteen charges of scorching vapor in his epiglottis before he could think to let go. I've seen that dog's hind quarters several times since, disappearing around the barn up a 13% grade at 20 miles an hour; but for all I know he lost his head in that first round with my black flyer.

Less than a mile beyond, a decrepit horse and ancient wagon, bearing a country couple seemingly more dilapidated than the outfit, came in view. A quarter mile away they were when the arms of the lady began a complicated series of motions suggestive of a windmill, which turned out to be a signal for my benefit. I ran to within a hundred yards, and stopped, while the ancient farmer climbed down, and, with shaking limbs and trembling fingers began to tighten some fifteen or eighteen knots in the rope of which the harness was largely constructed. I waited for about five minutes, and then ventured to ask how long he wanted the exclusive privilege of the road, and ascertained that "a bit more time" would do. His companion's remarks during this period were too lengthy to quote, but included a threat that if I smashed her "new wagon" she would sue me.

The next few minutes gave me leisure to jolly my new acquaintances—as politely as the presence of ladies required—but at length the old man led the old horse in his old harness, with the old wagon and old woman in tow, carefully by the new-fangled conveyance, whilst the dame, sitting sideways and clutching for safety the unsecured plank which did duty as a seat, alternately screamed with terror and showered on my head all of the imprecations which I had refrained from uttering.

The horse never looked at the machine.

It struck me afterwards that the lady's remarks exactly fitted the situation—from my own point of view.

The next four "hay-motors" passed showed slight nervousness, while three of their drivers added to my troubles in the world to come—or thought they did—and the fourth thanked me for slowing down.

With faith in the race renewed by this experience, I approached with some confidence the next nag, which was painfully coaxing a load of turnips up a steep grade. The driver (in a sunbonnet) gave one fearsome glance, and, jumping from the meal bag that covered part of the turnips, ran into the woods, scaling a fence, over which she tumbled into some bushes that looked too brambly for my ideas of comfort.

The horse never looked at the machine.

I left the bashful maiden to deal with the brambles at her leisure, and remarked on the good sense of some dumb brutes, which closed the incident for us.

Two more nervous and voluble drivers of two stolid horses were followed by a fine animal drawing a pneumatic-tired runabout, with a driver who bore, in goggles, costume, and outfit, all the earmarks of a professional horseman. The horse danced, and trotted by, while the man sat round-shouldered and lax-jawed, with reins slack and terror shining through his glasses. I heard afterwards that he recited his hair-raising adventure, with interesting details of his heroic control of the maddened beast, to a roomful of admiring companions, and boasted of the arrest and fine which I was shortly to suffer; but I have yet to hear from him.

Seriously, these incidents represent only an average experience. I have driven an automobile two or three thousand miles and have met surely that number of horse-drawn vehicles. The number of drivers—except coachmen—that have displayed as much courage as their horses, could be counted on the fingers of your hand.

Horses shy more at other things than at automobiles; but when a horse scares at a fluttering paper, dashes through a crowd, and maims women and children, it is called—"unfortunate."

Perhaps some day a man will be required to prove his ability to control his horse, as he now is expected to control his automobile, before he will be permitted to emerge from the barnyard or training track and take his animal on the public road.

Half the drivers on a Sunday or holiday are using strange animals—livery outfits or the equipages of friends;—and who hesitates to take on the public streets for trial strange horses, known to be skittish, of whose performance he is doubtful? When accidents occur it is only "unfortunate."

I am waiting to read an account of some damage suit wherein a defendant automobilist asks that the driver prove that he knew the peculiarities of the animal, and had provided means to insure safety, that he could immediately stop in the event of a child running out from the sidewalk, or another rig turning a nearby corner, and that in meeting the automobile he had himself handled the horse with proper care. When drivers stop taking needless risks it will be time to demand more care than is now exercised by the chauffeur.

I have not touched on the practice of letting children drive, of racing on the highway (several horses in the 2:15 class are speeded daily by my home, so recklessly that we hardly dare let the children out of doors), nor a dozen other dangerous things that are allowed, and which cause heartrending accidents that are only "unfortunate." Most horse drivers are more frightened than their beasts, and the reason is simply their own knowledge that they are unable, in an emergency, to control the force for which they are responsible, and on which their own and others' safety depends.

"AUTOCARS" IN THE SNOW.

The Cunningham Steam Truck.

The especial feature of this truck, built by the Massachusetts Steam Wagon Co., Boston, Mass., is its system of transmission, by means of which power is applied to both front and rear wheels. This is accomplished, first, by swiveling the front axle horizontally about a "fifth wheel" as in the ordinary horse truck, and, second, by using a gimbal connection between the central driving gear on this axle and the rotative portion of the axle, so that the driving gear maintains its alignment while the axle swivels inside of it.

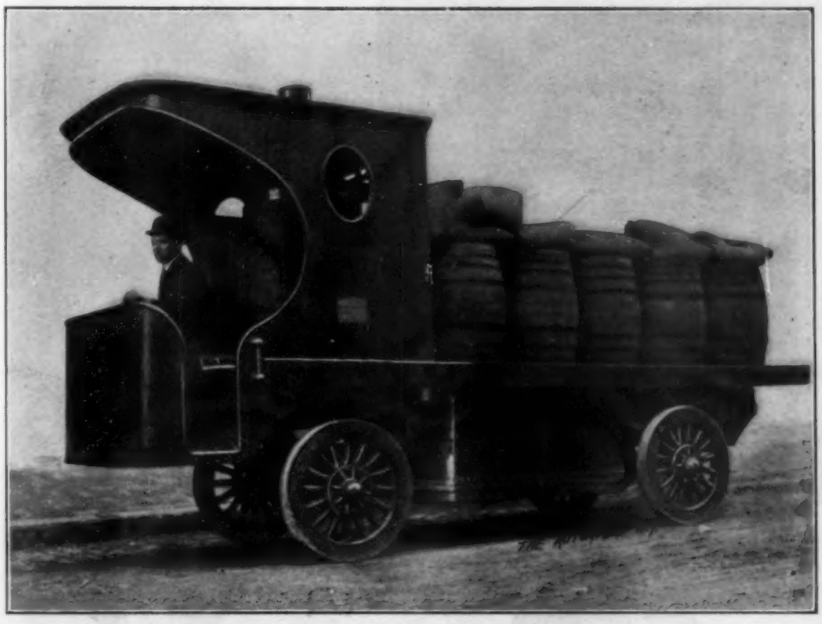


FIG. 1. THE CUNNINGHAM STEAM TRUCK.

The engine, as usual, is suspended horizontally under the frame. It is compound, having cylinders 3½ and 6 by 5 inches, and reversible by a special valve arrangement. A pinion on the crank shaft drives two equal-sized gears on transverse shafts fore and aft respectively of the crank shaft. These shafts, through clutches, drive four sprocket pinions, two on each shaft, and sprocket chains from these run to similar pinions on short countershafts just above the front and rear axles. A spur pinion on each countershaft drives a large gear on the axle. As both axles are driving axles, a differential is as necessary on the front as on the rear one, and these are therefore put inside the large driving gears just mentioned. In the case of the front axle, the gimbal rings come between the gear and the differential, so that the latter follows the axle in its swiveling. Suitable distance rods connect the main frame with cases over the gears on the axle and keep the chains taut.

The clutches above mentioned are on the friction disk principle, but hydraulic pressure instead of toggles or the like is used to effect the gripping. By suitable valves the operator can apply the power, if desired, to only one of the axles, leaving the other clutch free. Boiler pressure is used in the clutches instead of adding a separate pump. Braking is accomplished by friction clamps acting on the outer drums of the clutches.

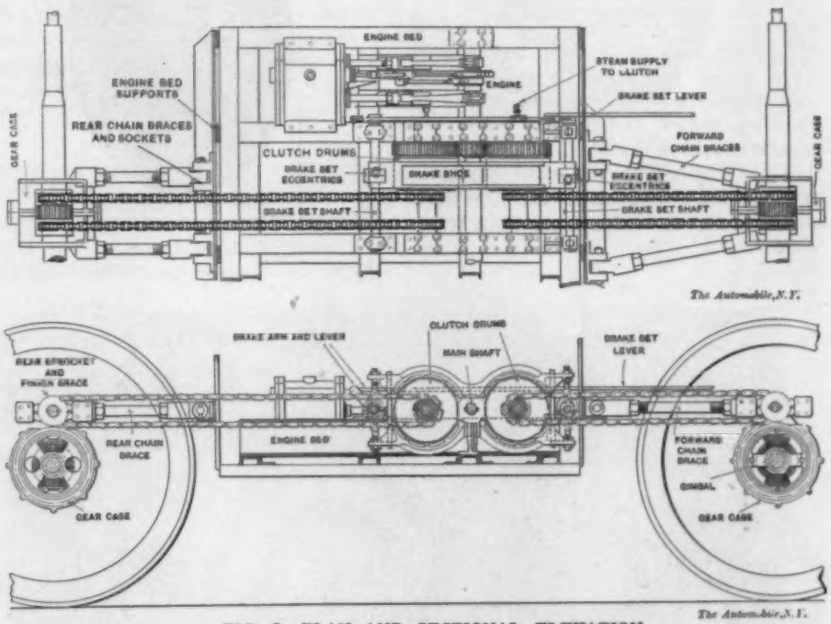


FIG. 2. PLAN AND SECTIONAL ELEVATION.

A combination worm and spur gear, very rigid and perfectly irreversible, is used for steering. The steering wheel is mounted on a horizontal axis on the inside of the dashboard.

A water tube boiler, having 120 sq. ft. of heating surface and 3 sq. ft. of grate surface, supplies steam at pressure up to 200 lbs. Gas coke is used for fuel. The exhaust steam passes through a condenser, where it heats the feed water, and thence escapes at the smoke funnel. A feature of the valve gear of the engine is that by the turn of a lever live steam may be admitted to both cylinders to increase the power when necessary.

A transmission which should drive all four wheels has long been recognized as very desirable in order to obtain the maximum traction on slippery surfaces. Most previous devices for this purpose, however, have been either unmechanical or too complex, and the success of this solution of the problem will be awaited with much interest.

Cup Offered for Bad-Roads Record.

With the object of demonstrating what the steam carriage is capable of accomplishing when the roads and climatic conditions are at their worst, the Steam Vehicle Co. of America has offered a silver cup to the owner of the steam vehicle which shall establish the best road record between the City Hall of Hoboken, N. J., and the City Hall of Philadelphia, or vice versa, before April 15th, 1901.

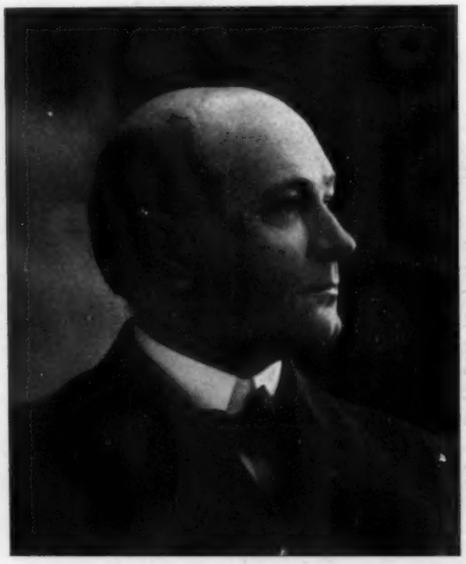
The conditions are that any intending contestants shall notify the donors at their New York office, 253 Broadway, twenty-four hours before the time of starting, and that the time shall be actual with all stops included. Any steam vehicle of any description may enter, and the route may be chosen by the contestant.

The Steam Vehicle Co. of America announce that they will later offer another cup for competition during the summer months.

The Philadelphia Club Show.

The Philadelphia automobile show, Feb. 4 to 9, under the auspices of the Pennsylvania Automobile Club, proved very successful, as regards both the attendance and the number of exhibits. Thirty-two manufacturers of automobiles were represented, some by local agents, and thirty manufacturers and dealers in sundries, motors, and running gears. Altogether over a hundred vehicles were shown. The public was most appreciative, and the apprehensions that this show would suffer in that respect from being immediately preceded by another proved unfounded.

HENRY J. JOHNSON, Secy.



F. L. SWEANY, Pres.

W. H. HINCHMAN, Treas.

L. GOODMAN, Chairman Track Com.

GEO. E. GOSSLER,
Member of Track and Finance Committees.

WM. F. RUDOLPH, Chairman Finance Com.

It, giving trial rides to all interested. A program of track contests was also given, including starting and stopping tests, coat and waistcoat races, obstacle and coasting contests, etc. A series of pursuit races, with machines starting at opposite sides of the track, limit ten laps, was also run, till on Thursday night one machine, run at a reckless pace, went through the rail on a curve and knocked down a number of spectators, injuring two or three seriously. As the track was quite short, and was not banked, the moral of the accident was plain, and the races were stopped.

MAIN HALL, PHILADELPHIA SHOW, FEB. 4 TO 9.

An 18-foot elliptical track surrounded the main body of the exhibits, and a steady procession of vehicles was kept on

Among the new machines was the Skene steam carriage, built by the Skene American Automobile Co., Springfield, Mass., and exhibited there for the first time. Another new-comer was the Searchmont, illustrated on another page. Other new firms were the Standard Motor Vehicle Co., Camden, N. J., who showed a light gasoline runabout; the Union Motor Truck Co., Philadelphia, with a gasoline delivery wagon; the Howard Steam Wagon Co., Trenton, with a steam carriage; and Fulton & Walker, who showed an electric ambulance. The largest single exhibits were those of the Woods Motor Vehicle Co., the Locomobile Co. of America and the Pennsylvania Electric Vehicle Co. The Automobile Co. of America, represented by the Motor Carriage Co., their local agents, had a good display of gasmobiles. One of these, operated by Fred. Walsh and Chas. Meyer, had come by road, making the run from Jersey City to the Armory in 3 hours 50 minutes, an average speed of well over 25 miles an hour.

The Pennsylvania Automobile Club, under whose auspices the show was given, was organized in August of last year. Its officers are as follows: President, Dr. F. L. Sweany; first vice-president, Julian Hangwitz; second vice-president, Chas. S. King; secretary, Henry J. Johnson; treasurer, W. H. Hinchman; captain, R. P. McCurdy; lieutenants, J. K. Wharton, Geo. E. Gossler.

The Loomis Gasoline Delivery Wagon.

The Loomis Automobile Co., Westfield, Mass., has added the light delivery wagon shown in the illustration to their line of gasoline vehicles. This wagon has a twin-cylinder 4½ by 4½-inch motor,

THE LOOMIS DELIVERY WAGON.

with shifting jump spark controlled by the driver's right hand. Two forward speeds and one reverse are used, the high-speed clutch being worked by a lever under the driver's right hand, and the other two by pedals. A speed of 20 miles an hour is possible, but of course will seldom be used. The shifting spark gives the intermediate speeds, and the carburetor, once set, is not disturbed. Four gallons of water and seven gallons of gasoline are carried.

The company states that its carbureter works perfectly without the application of heat, even in the coldest weather, and needs no change of adjustment for temperature. No vibrator is used in connection with the igniters, and no adjustment is required on them. A special feature is the use of a small pump to feed the lubricating oil to the bearings in quantities proportional to the engine's speed. The oil goes first to the centre bearing of crank shaft, thence each way to the cranks, along which it is carried by centrifugal force to the crank pins, and is then thrown off, reaching the interior of the cylinders at the same time. From the crank case the oil drains back to the reservoir and is pumped again. By this system all trouble with the valves and spark plugs, due to an excess of oil getting into the cylinders, is avoided.

The "Oldsmobile."

The Olds Motor Works, of Detroit, Mich., will shortly place on the market a light gasoline runabout which they call the "Oldsmobile." It is of the general design shown in the illustration herewith, which represents a regular runabout body with a box for delivery purposes superimposed behind. The motor is of the standard "Olds" type, rated at 4 h.p., and is claimed to take a 25 per cent. grade and to give speed up to 25 miles per hour. The vehicle weighs under 600 lbs., and is said to use only about a gallon of gasoline in 40 miles. The body is partially independent of the motor and running gear, rubber cushions being interposed between the two, thus lessening the vibration felt by the passengers.

THE "OLDSMOBILE."

The Eclipse Automobile Co., whose steam carriage was illustrated in our last issue, is located in South Easton, Mass., not South Boston, as by an error was there stated. Both the factory and main office are in South Easton.

The Searchmont Wagonette.

This little carriage, built by the Searchmont Motor Co., 1230 Orkney St., Philadelphia, is equipped with either a single-cylinder or a double-cylinder motor, rated respectively at 5 and 10 h. p. There are two forward speeds and a reverse, controlled through separate clutches by a single lever, and intermediate speeds are obtained by shifting the spark. The machinery is carried on the frame after the manner of street-car motors, swinging at one end on the transmitting shaft, and being hung from a spring at the other end. The frame itself, with the smaller motor, derives the needed flexibility from the springing of the reaches, while with the heavier motor the front axle is separate and swivels vertically on a central pin. Two brake systems are used, operated by pedals. One brake is on the pinion gear, while for emergencies each rear half-axle is provided with a band brake acting on its own wheel. The wheels are 32 inches, with 3-inch rear and 2½-inch front tires. The wheel base is 60 inches and the track 56 inches. The upholstery is in Pegamoid, which is claimed to be more durable than leather and less slippery. Five gallons each of water and gasoline are carried.

THE SEARCHMONT WAGONETTE.

14 see p. 89 note

The Automobile

Published at
150 NASSAU STREET, NEW YORK,
on the first of each month,
BY THE E. L. POWERS CO.

SUBSCRIPTION PRICE.

North America - - - - - - - - - $1.00
Foreign - - - - - - - - - - 1.50
Advertising Rates Upon Application.

Address Communications to
THE AUTOMOBILE, 150 Nassau St., New York.

Entered at the N. Y. Post Office as second-class matter.

CONTENTS.

(Copyright, 1901, by The E. L. Powers Co. All rights to signed articles reserved.)

Mr. Geo. F. Chamberlin of the A. C. A., in His "Gasmobile." 49
A Handsome Touring Carriage 50
The Club Acts on Excessive Speed..... 50
Damages Asked for a Runaway..... 50
The "Reading" Steam Carriage. By Herbert L. Towle. 50, 51, 52
New Quarters of the A. C. A..... 52
Automobiles at the Pan-American Exposition. 52
From New York to Boston by Steam Carriage. By Mrs. F. P. Avery..... 53
Which Takes the More Care—The Automobilist or the Horseman? By Henry S. Chapin..... 54
The Cunningham Steam Truck..... 55
Cup Offered for Bad-Roads Record. 55
The Philadelphia Club Show..... 56
The Loomis Delivery Wagon 57
The "Oldsmobile." 57
The Searchmont Wagonette 57
Editorials 58, 59
A Case of Self-Defense.
Endurance Contests to the Fore.
A Question of Negligence.
Where Our Readers Can Help.
Amend That Law!
The Moral of the Shows.
Technical, But Useful.
Import Duties on Automobiles.
More About Repair Expense. 59
Hints on Steam Vehicle Management.—VI. By Geo. T. Hanchett..... 60
A Severe Endurance Test. 60
Club News and Views..... 61
Worcester Automobile Club.
National Capital Automobile Club.
Automobile Club of New England.
Automobile Club of America.
The Ferry Bill a Law..... 61
Speed Legislation in New York State..... 61
A Pneumatic-Tired Steam 'Bus 61
The Speed Question in England..... 61
The New Charging Station of the N. Y. Electric Vehicle Transportation Co. 62, 63
The Long Island Endurance Test 63
More About the "Mercedes" Racer 64
Lower Price in France 64
The International Cup Race 64
The Paris Exposition 64
The Chicago Show..... 64
The Strafton Motor Bicycle. 64
Business News 65
Patents 65
Advertisements.....65, 66, 67, 68, 69, 70, 71, 72

A Case for Self-Defense.

In this country, as already in England, recent events indicate that the speed question is approaching an acute phase; and there appears to be serious danger that in some quarters the lawmakers will not stop with enacting reasonable limits of speed, but will be carried by the force of organized prejudice into practically legislating motor vehicles out of existence. This is particularly true in rural districts, where the liability to collisions is trifling, and the objection to the mechanical vehicles is based, ostensibly at least, on the danger of frightening horses. This, of course, is not the whole story, for unfortunately there are "sporting" drivers who run through villages at speeds dangerous to other users of the road. Such mischief-makers cannot be too severely dealt with, and we believe that every club in the country will find it to its interest to emulate the recent firm stand of the A. C. A. regarding them.

We are convinced, however, that the number of offences of this sort is in reality very small, and that by far the larger part of the farmer's outcry against the auto is born of the reportorial imagination and of mere unwillingness to train his horses. Again, steam and gasoline automobiles appear, by reason of their rapid exhaust, to be traveling much faster than they really are: it is not uncommon for one seeing them for the first time to estimate their speed at at least double what it actually is, and many of the most sensational stories of high speeds are due to nothing more than this fact. The farming community is both honored and indispensable, but it is notoriously the last to feel the effect of progress of any sort, and it need astonish no one that the mere novelty of the automobile should be the occasion of blind hostility among some of this class. The farmer is not undeserving of sympathy; his nags take fright more easily than city horses, while he himself, by no especial fault of his own, is apt to see in the snorting auto a sort of infernal machine, invested with heaven knows what diabolical powers of destruction. That he should expect his horses to be agitated equally with himself is only natural, and it will need considerable experience in horse and man to overcome this.

The situation, however, is essentially temporary, and one which is bound to correct itself. Bearing this in view, every automobilist should exert himself to the utmost to prevent the blanketing of the countryside with speed limits whose only object can be to exclude motor vehicles altogether. In this connection the article on another page, by an automobilist whom we can vouch for as a careful driver, is quite appropos. Confronted with an ignorance so fantastic in its crudity, and with a complacent recklessness entrenched in long custom with the ribbons, the automobilist may well regard a fifteen-mile limit as his protection from the horse driver rather than as a burden.

Endurance Contests to the Fore.

Although the rules of the New York to Buffalo endurance contest of the A. C. A. have not yet been determined on, automobile clubs throughout the country will read with interest the amended rules governing the shorter test of the Long Island Automobile Club, published elsewhere in this issue. It was at first proposed to include a fuel consumption test in the event, and also to make the speed of the winner, and the weight of his machine, factors in the award; but it was soon realized that to introduce so many factors would involve almost interminable complication, and it was finally decided that a straight-out non-stop contest would be nearly as satisfactory as a demonstration of capability, and much more easily managed. We hope that the Long Island Club's example will be imitated by many other clubs, as there is certainly no better way of bringing the automobile before the public as a machine for practical use and not a toy.

A Question of Negligence.

There are four ways in which the automobilist may pass a horse which gives signs of being frightened. One—the easiest and most indefensible—is to rush by regardless of consequences. Another is to coast by at a fair speed, but with the power shut off. This practically eliminates noise, and, unless the horse has been rendered apprehensive by his driver's nervousness, the machine will generally be past before the horse has time to take fright. This is probably the best plan when passing in the same direction, and will often serve also when meeting a horse. A third way is to stop and hold the horse while the machine is run past under its own power. Though this is often done, we cannot help regarding it as a serious error, since it virtually notifies the horse that he is expected to be frightened, and, of course, he thinks that the reason for his expected alarm is in the machine instead of in himself.

The fourth and by all odds the best way to meet a timid horse is to stop the machine and lead the horse either past it or, better yet, up to it, if this can be done. This tells the horse that he is not expected to be afraid, and those who have tried it find that the lesson is very quickly learned. More than that, it is learned for subsequent occasions as well, whereas by the previous plan the horse is sure to take fright again.

It seems very probable that if the defendant, in the case of Cook vs. Moore, elsewhere referred to, had complied with the plaintiff's request that he stop his machine and allow the horse to be led past, the result would have been a damage suit spared. In any case, the defendant's non-compliance with the request seems to have thrown at least the technical responsibility for the accident on himself.

Where Our Readers Can Help.

We believe there is no reader of THE AUTOMOBILE who will not concede its value to all those at present or prospectively interested in self-propelled vehicles. No expense is spared to make it thoroughly up-to-date, readable, and trustworthy in its information; and it is going to grow better and brighter all the time. But there is one thing which the editors cannot do, and for which we must turn to our readers. We want you and everyone to use our columns freely for the interchange of personal experiences and opinions, on all topics relating to automobiles and automobilism. There are dozens of matters—club activities, touring routes and hotel accommodations, endurance and speed tests, legislation, and the management, care, and repair of the machines themselves—in which the ideas and experience of the more favored may be of the greatest value to others. The fraternity of automobilists includes the brightest and most progressive minds in the community, who are bound together by a common enthusiasm and a common cause. They can aid each other and advance the cause in no better way than by putting each of them the ideas, which would otherwise rest unspoken, into a brief letter to the editor—the briefer the better, so long as the kernel is there.

We are especially glad to publish accounts of road experiences, in the matter of emergency repairs and precautions to be observed, and we assure our correspondents that they need not be afraid to give the names of their machines. With the name given, such letters may be extremely helpful to other owners of the same make; without the name they make interesting reading, but that is apt to be all. If explanatory sketches are added, no matter how rough, we will see that they are correctly reproduced.

So far as it can, THE AUTOMOBILE is ready to assist its readers, by answering all legitimate questions of general interest. Where necessary, it will refer queries to recognized authorities in their several lines, and it invites all its readers to avail themselves of its columns in this way.

Amend That Law!

The verdict in the damage suit of Cook vs. Moore, referred to elsewhere in this issue, was undoubtedly influenced by the New York red-flag law which, aimed at traction engines, is so worded as to cover all steam automobiles invented since its passage. The application of the law in question to the light and almost silent steam carriages of to-day is so manifestly absurd that it has latterly been regarded as a dead letter in this regard, and has been permitted to slumber on the statute books, much like the old laws regarding witchcraft, which in some New England states, we believe, no one has taken the trouble to remove.

But a "dead" law unrepealed is altogether too facile an instrument for mischief-makers or malicious persons; and many careless drivers of horses, who have no one but themselves to blame when their beasts run away, will vent their spleen in suits for "negligence" because, forsooth, the driver of the auto did not send another man (also in an auto?) ahead of him with a flag! Applied to traction and dummy engines and to road rollers, the law is perfectly proper; but it should be amended to except steam carriages and delivery wagons at least, if not all steam wagons which do not draw a trailer.

The Moral of the Shows.

When the country is having a surfeit of automobile shows, as at present, it is not remarkable that the combination show in Philadelphia should have proved a dismal failure, and that the projected Boston show should have been abandoned owing to the refusal of manufacturers to enter it. At the same time the success of the show under club auspices in Philadelphia enforces once more the lesson on which we have before insisted, that the clubs are the proper bodies to organize such shows, and that when they are willing to undertake the task there is little excuse for other parties doing so. The clubs are under no suspicion of seeking to "work" the manufacturers for the benefit of their own pockets, and the fact of their patronage is certain to be more effecting in attracting the class of people from which purchasers come. As the users of automobiles are for the most part of the well-to-do classes, an automobile show is a very different thing from, for instance, a bicycle show. To some extent it is necessarily a social event, and under club auspices it has a social standing wholly absent from the production of the professional showman. When the public is offered its choice it will always choose the club show.

Technical, but Useful.

Although the article in this issue by Mr. Geo. T. Hanchett goes rather far into the technicalities of the subject, we think that it will be worth the while of everyone interested in the mechanics of the steam vehicle to familiarize himself with the points there brought out. An understanding of the operation of the slide is almost essential to anyone who has charge of a steam engine, particularly if he is liable to have to make his own repairs; and the Zeuner valve diagram is an extremely simple and elegant geometrical method of determining the correct setting of these valves. By means of this diagram the user can reset his own eccentric in case of its slipping, and will be able to trace the fault in case of excessive wear or maladjustment.

Import Duties on Automobiles.

Under section 173 of the Dingley tariff law, automobiles imported from abroad are subject to a duty of 45 per cent. ad valorem. But if they have been owned and used abroad by the person importing them for a year or more, they are, like carriages, classed as household effects, and as such come in free of duty. This is under the provisions of paragraph 504 of the law, which puts on the free list books, libraries, usual and reasonable furniture and similar household effects of persons or families from foreign countries all the foregoing, if actually used abroad by them not less than one year, and not intended for any other person or persons, or for sale.

More About Repair Expense.

The following letters from users were received too late for insertion in the February issue. The first is from a well-known member of the Pennsylvania Automobile Club, and the second is from a resident of Long Island:

1. Steam.
2. 3½ h. p. 1,000 pounds.
3. 4,000 miles.
4. $10 per month.
5. Depreciation rapid.
6. Roads of average charac.er.
7. (a) 20 miles an hour.
   (b) 12 miles an hour.
8. .....
9. .....
10. For pleasure and business both. Less expensive than horses.

R. P. McCurdy.

1. Steam.
2. 3½ h. p. About 1,050 pounds.
3. 3,500 to 4,000 miles.
4. $225 to $250.
5. When the weather is not freezing I use the machine regularly between house and factory. I should say that I do not think it will last more than four years, or say for 15,000 to 18,000 miles.
6. City streets, Long Island roads, and an occasional trip on ordinary country roads.
7. (a) 15 to 18 miles per hour.
   (b) 8 to 12 miles per hour.
8. Two people three-quarters of an hour per day.
9. .....
10. For pleasure and transportation between house and factory, distance 5 miles. I think the expense is a trifle less than for a horse, but have never kept a horse for pleasure and judge from business horses.

Edw. H. Bancker.

Hints on Steam Vehicle Management.—VI.

By George T. Hanchett.

In order that the valves shall distribute the steam properly with reference to the motions of the piston, it is necessary to adjust the position of the eccentric, the throw of the same and the laps of the valves, and it will not do to use any "cut and try" method, for, like the combination of a safe, there is only one arrangement that will give the best results out of the many thousand possible adjustments.

To determine the steam distribution that a certain adjustment of the valves will produce, recourse may be conveniently had to what is known as the Zeuner diagram, which is shown in Fig. 1. It is not necessary here to demonstrate the mathematical accuracy of this convenient device, or to more than state that it may safely be taken for granted.

We will assume that we have a valve the inside and outside laps of which are known, as is also the eccentricity and the angular displacement of the eccentric ahead of the crank, for the eccentric is always set a certain amount ahead of the crank in the direction of rotation. This amount is always greater than 90 degrees, and the excess over 90 degrees is known as an angular advance. What is meant by the laps of the valves may be understood by reference to accompanying diagram (Fig. 2).

To lay out the Zeuner diagram, draw a circle such as X Y X′ Y′ Fig. 1. We will assume that the crank is traveling in this circle, so that any given radius shows its angular position at any time. Consider the head end of the cylinder and assume that X is the head dead centre, and that X′ is the crank dead centre, that is to say that the cylinder is at the right of the figure. Draw the radius R O such that the angle R O Y is equal to the angular advance or excess of the lead of the eccentric ahead of the crank over and above 90 degrees. On this radius lay off a distance O P equal to the throw of the eccentric, and on this line as a diameter draw a circle. Draw also the circle D M B K, using as a radius the outside lap as measured from the valve in its central position. Draw the smaller circle e b c d, using as a radius the inside lap of the valve. It is common to call these two last circles the lap circles, and the circle described on O P the valve circle. From the intersection of the lap circles with the valve circle the exact location of all of the events of the stroke can be determined. Thus, the radius O R′ drawn through O A shows the position of the crank at the instant that steam is admitted. It has, as will be noted, a slight angle before the crank reaches the dead point, that is to say, the angle R′ O X, or the angle of lead. At the dead point or radius X O the width of the port opening is equal to the line L D, and as the radius proceeds around the circle, corresponding always to the crank motion, the amount included between the outside lap circle and the valve circle shows the amount that the valve is open. Thus, at the radius O R the valve is opening a maximum amount, equal to the length of the line M P. This is called the position of maximum port opening. As the crank proceeds the amount of valve opens becomes less and less until the position O R_2 is reached, which radius passes through the intersection of the valve circle and the outside lap circle. This is the point of cut-off and ends the events of the forward stroke so far as the outside lap is concerned.

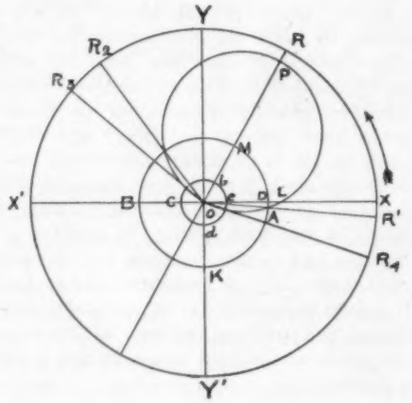


FIG. 1.

The inside lap controls the events which correspond to the opening and closing of the exhaust passage, and which are respectively known as release and compression. Release occurs at the crank position O R_3, where the inside lap circle

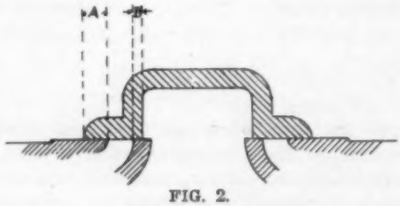


FIG. 2.
A = outside lap.
B = inside lap.

cuts the valve circle, and compression occurs at the position O R_4, or the other intersection of the inside lap circle with the valve circle. By drawing a second valve circle on the other side of the centre on the radius O P produced to a diameter, the events of the crank end side of the cylinder may be similarly located.

Thus it will be seen that, with any given set of valve adjustments, the position of the various events of the stroke may be accurately determined, and conversely a set of valve adjustments can be deduced to obtain any combination of events that is desired within certain limits. In this connection it is well to lay down the following principles, which will be apparent by a little study of the diagram or even an abstract inspection of the mechanism:

1. Increasing the angular advance makes the events of the stroke occur sooner, and vice versa.

2. Increasing the outside lap delays admission and hastens cut-off, and vice versa.

3. Increasing the inside lap delays release and hastens compression, and vice versa.

4. Increasing the eccentricity hastens admission, delays cut-off, delays release, and hastens compression, and vice versa.

All of these effects will be apparent on drawing different diagrams and varying the laps on the advance and other adjustments as indicated.

A Severe Endurance Test.

What was one of the severest endurance tests on record was given a Columbia gasoline runabout by its makers, the Electric Vehicle Co., on the 19th and 20th of January. Starting at 5 a. m. on Saturday, in a snowstorm, the machine was run through ten consecutive round trips from Hartford to Springfield, Mass., and return, a total distance of 538 miles. The weather was very cold, reaching twelve degrees below zero at one time, and a high wind blew from 10 a. m. Saturday till sundown. The ten trips were made in 41 hours of continuous running, and the engine was stopped only once, this being on account of the car running into the ditch by reason of the blinding snow. When backed out it started on at once. The time would have been shorter but for the fact that the drivers were more than once compelled to get out and walk beside the machine to keep from freezing. The fastest time one way was made by H. P. Maxim, from Hartford to Springfield in 1 hour and 10 minutes, and the fastest round trip was made by H. W. Alden, a driver, in 2 hours and 42 minutes. The slowest round trip was 4 hours 50 minutes, and was made on Saturday night. The drivers were of necessity frequently changed, but Mr. Alden succeeded in running three round trips without leaving his seat, a distance of 161 miles in 9 hours 30 minutes.

The above machine, a standard Mark VIII runabout, has a single-cylinder engine of 4.6x6.8 inches cylinder dimensions, mounted in front, and with a gear transmission somewhat on French lines, but with three instead of four speeds. The motor itself is on springs separate from the body. A governor controls its speed.

Cincinnati has an automobile ordinance with a speed limit of 8 miles an hour. Lamps and bells are required, and no two automobiles may run abreast without special permission.

CLUB NEWS AND VIEWS

Club Directory.

Automobile Club of America, Malcolm W. Ford, Secy., 203 Broadway, New York.

Automobile Club of Baltimore, W. W. Donaldson, Secy., 872 Park Ave., Baltimore.

Automobile Club of Bridgeport, F. W. Bolande, Secy., 49 Cannon St., Bridgeport, Conn.

Automobile Club of Brooklyn, C. Benton Dix, Secy., Hotel Clarendon, Brooklyn, N. Y.

Automobile Club of Columbus, C. M. Chittenden, Sec., Broad St., Columbus, O.

Automobile Club of New England, —— McQueston, Secy., Brookline, Mass.

Automobile Club of Rochester, Fredk. Sager, Secy., 66 East Ave., Rochester, N. Y.

Buffalo Automobile Club, Ellicott Evans, Secy., Lenox Hotel, Buffalo, N. Y.

Chicago Automobile Club, H. M. Brinckerhoff, Secy., Monadnock Block, Chicago.

Cleveland Automobile Club, L. H. Rogers, Secy., Cleveland, O.

Columbia College Automobile Club, Lewis Iselin, Secy., Col. College, New York.

Indiana Automobile Club, August Habich, Secy., Indianapolis.

Long Island Automobile Club, C. W. Spurr, Jr., Secy., 552 State St., Brooklyn.

Massachusetts Automobile Club, L. E. Knott, Secy., Ashburton Pl., Boston.

New Jersey Automobile Club, Dr. H. Power, Secy., Upper Montclair, N. J.

North Jersey Automobile Club, E. T. Bell, Jr., Secy., Paterson, N. J.

Philadelphia Automobile Club, Frank C. Lewin, Secy., Hotel Flanders, Phila., Pa.

Pennsylvania Automobile Club, H. J. Johnson, Secy., 138 N. Broad St., Philadelphia.

Rhode Island Automobile Club, F. A. Fletcher, Secy., 42 So. Water St., Providence.

San Francisco Automobile Club, B. L. Ryder, Secy., San Francisco, Cal.

Worcester Automobile Club, H. E. Sheiland, Secy., Worcester, Mass.

Worcester Automobile Club.

The Worcester Automobile Club has elected the following officers for the ensuing year: President, J. W. Bigelow; vice-president, Edwin Brown; treasurer, B. A. Robinson; secretary, H. E. Sheiland; chief marshal, W. J. H. Nourse; consulting engineer, M. A. Macker.

National Capital Automobile Club.

The new club at Washington, D. C., adopted the above name at a meeting on Feb. 2. Lieut-Gen. Nelson O. Miles was chosen president, and a constitution and by-laws were discussed. The county of Hertford, Maryland, has just come into a bequest of $50,000 for road improvement, and the chairman, C. E. Foster, suggested that efforts be made to have this applied to the main road from Baltimore to Philadelphia. The connection of road improvement with the contemplated increase in free rural postal delivery was also discussed.

Automobile Club of New England.

The Automobile Club of New England now occupies the house formerly used by the Suburban Club, at Brookline, Mass. The stable, formerly devoted to the horses and rigs of club members, affords convenient storage for autos, and a skilled mechanic will be employed to attend to necessary repairs.

Automobile Club of America.

At a meeting of the Automobile Club of America, in its new quarters, on Feb. 26th, Mr. J. A. Kingman of the Locomobile Company of America, gave an informal talk on the operation and care of steam vehicles. The talk was illustrated by drawings of the Locomobile and its various parts. Similar talks by C. J. Field on gasoline vehicles and by A. L. Riker on electric vehicles will follow on March 12th and 26th respectively.

The Ferry Bill a Law.

Senator Platt's bill amending the steamboat law so as to permit automobiles using gasoline to retain the same in their tanks when crossing ferries, etc., passed Congress without important opposition, and received the President's signature. The text of this bill in its final form is as given in THE AUTOMOBILE last month.

Speed Legislation in New York State.

Three bills were introduced in the New York state Legislature last month looking to speed regulation of automobiles. The first of these, introduced by Assemblyman Doughty, provided that the Board of Supervisors of any county adjoining a city of the first class should have the power to regulate the speed in that county. Another bill, introduced by Assemblyman Smith, extended these provisions to all counties in the state. These measures were opposed by the Automobile Club of America and delegations from them and from the National Association of Automobile Manufacturers visited the Legislature. As a result of their efforts a uniform bill for the state will be substituted, providing limits of eight miles an hour through villages and towns and of fifteen miles an hour in the country.

A Pneumatic-Tired Steam Bus.

De Dion, Bouton & Cie., who, in addition to the motocycles and light voiturettes by which they are best known, have for a number of years been builders of steam-driven heavy vehicles, have produced an eight-passenger bus of twenty horse-power, fitted with 4½-inch Michelin pneumatics. The bus weighs when empty about 2,200 kilogs. (4,840 lbs.), and it is said that no previous attempt to carry such a weight on pneumatic tires has been successful. The average speed on a clear road is said to be from twelve to eighteen miles an hour, but the vehicle is capable of doing twenty-five on a spurt.

The Speed Question in England.

Owing to the unreasonable speed indulged in by a few individuals in England, and particularly to the refusal of these individuals to stop or slow down when signalled to do so by drivers of restive horses, popular hostility to the automobile in that country appears to be approaching a crisis. County councillors and others appear to favor numbering, a number to be carried conspicuously on the back of every motor vehicle. This suggestion has met with great opposition, and to head it off the Automobile Club of Great Britain has taken official stand in favor of licensing, such licenses to be revocable in case of persistent abuse of road privileges. Many owners, however, protest against this, as putting automobilists at the mercy of an ignorant and prejudiced constabulary, and various other suggestions have been made. One of the latter is that no vehicles be allowed built capable of more than a given speed, but this appears to be looked upon as impracticable.

Meanwhile, it is generally admitted that three-fourths of the public opposition is due to mere prejudice and the unwillingness of horse owners to take the trouble to train their beasts. Not only is the public prone to overestimate the speed of passing automobiles, but police officers often do the same. As the legal limit, even in the country, is very low, the ill-will even of careless drivers finds an easy vent in court summonses, wherein the presumption is all against the motorist.

Realizing that the first thing to be done is to enlighten the court, wealthy members of the club are making serious efforts to demonstrate to the local magistrates the superior ease with which the automobiles can be controlled, as compared with horse vehicles.

G. H. Lockwood, a peripatetic Socialist, has a project for acquiring a specially-designed motor wagon to assist him in spreading his gospel. Besides cooking and sleeping apartments for the evangelist himself, it will carry a graphophone and other specialties.

The New Charging Station of the N. Y. Electric Vehicle Transportation Co.

The largest electric vehicle station in the world is naturally an object of interest to automobilists; and the new quarters of the N. Y. Vehicle Transportation Co., which undoubtedly claim this distinction, are noteworthy not only for the magnitude of the traffic which they can handle, but for the perfection of their equipment as well. By the courtesy of Mr. G. Herbert Condict, the superintendent, to whom the details of the installation are mainly due, THE AUTOMOBILE is here able to give some account of the new plant and of how the traffic is handled.

The building proper, located at the corner of Forty-ninth street and Eighth avenue, is three stories high, with about three acres of floor space. Only the ground floor, which is 100 ft. wide by 400 ft. long, with a 70-ft. extension, is used for the actual work of charging and loading, the second and third floors being devoted to offices, store, repair, and show rooms, men's quarters, etc. The second floor, however, contains a switch-room, from which wires run to every charging stand in the battery room, and in which the current supplied to each battery is regulated and watched by one or two attendants who do nothing else.

To give an idea of what is done, it may be said that the battery room contains charging stands for 660 trays, and can be extended when necessary to accommodate 1,000. With the latter number charging, about 700 vehicles can be kept in operation, the number of all classes now in use being about half that. Four end-loading stands are provided, each of which will change the trays in 30 or more vehicles per hour, and two under-loading stands are expected to handle each double as many under-slung batteries as the others. It will therefore be possible to replenish well over 200 vehicles per hour, the limit being probably in the ability to get them out of the way fast enough, rather than in the capacity of the loading stands.

Figure 1, from the architect's plan, shows the general arrangement of the first floor. The main room is on the level of the sidewalk, and the vehicles enter from Forty-ninth street for reloading. The battery room is several feet lower than the other, for reasons presently to be seen, and the battery repair and rotary rooms are level with the battery room. The charging stands, arranged in ten long rows, are served by two overhead traveling cranes, each with ten sets of grappling hooks, which pick up and deposit trays at the volition of the operator. Crossing the battery room at intervals are six tracks, on which run trains of ten skeleton platform cars, each able to carry a tray of cells. These tracks extend through tunnels under the main floor, and each track supplies a loading stand by a pit or aperture in the floor, through which one tray at a time may be raised or lowered by a hydraulic table rising through the skeleton platforms of the cars. The attendant at the loading stand controls the movements of the cars, and can watch operations in the battery room through windows in the partition.

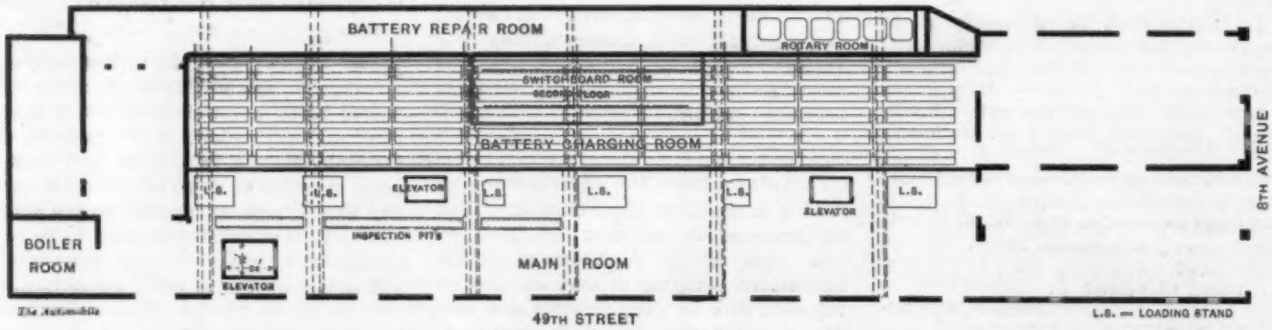


FIG. 1. PLAN OF FIRST FLOOR.

To handle the trays, each weighing some 1,200 lbs., with the necessary rapidity, manual effort has to be dispensed with to the utmost, and from charging stand to vehicle and back again the trays are moved wholly by power. As the vehicle approaches the loading stand it runs on to a swinging platform, where two iron guiding bars, at the level of the hubs, guide and centre it for loading. Then the body is raised by two hydraulic lifters coming up through the swinging platform, till its weight is off the springs and it can rise no higher when relieved of its batteries. Another hydraulic piston now advances, is hooked to the tray, and the latter is drawn out on to the hydraulic table before mentioned, which has previously been elevated to the level of the battery compartment of the vehicle. Now the table descends, leaving the tray to rest on one of the skeleton cars, and the train moves along till a car bearing a freshly charged battery is over the table. The latter rises, taking the battery with it, and the same piston which pulled out the exhausted tray now pushes the fresh one home.

One man, by convenient levers and switches, controls the movements of all the hydraulic apparatus and also of the train of battery cars, but a helper is required on the other side of the stand to help steer the trays into place and watch operations on that side generally. The photograph, Fig. 3, though taken with a very imperfect light, shows fairly well the situation when the vehicle is in position

FIG. 2. THE MAIN ROOM, FIRST FLOOR.

and the battery tray is on the lifting table just ready to be pushed in. The other photograph, Fig. 2, was taken looking down the main room at about 10 A. M., when most of the vehicles were out.

The electrical equipment is not less complete than the mechanical. Six rotary converters, each of 250 horse-power, receive alternating current from the Edison mains and convert it into direct current of six voltages differing from each other by about 3 volts. Each battery is charged first on the lowest voltage and successively on those higher, so that at no time does it get an excessive current. By using six different voltages no rheostats are required. All the changes of current are managed at the plug switchboards on the second floor, current readings being taken every fifteen minutes and an exact record kept of each charge.

To remove the pungent fumes of the charging cells, ten flues are located at

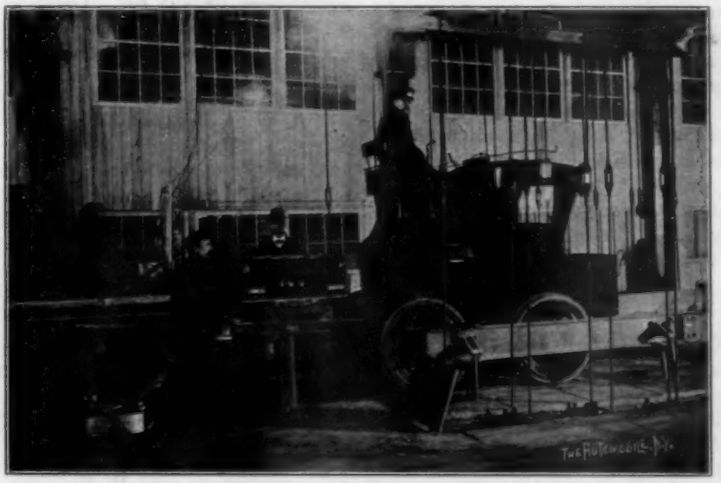


FIG. 3. PUSHING THE BATTERY HOME.

one side of the battery room, through which two eight-foot exhaust fans, driven by a forty horse-power motor, will renew the air every three and a half minutes. A leading feature of the plant is the installation of everything in several units instead of one—six loading stands, six converters, three elevators, two steam heating boilers, two cranes, etc.—which will render a collapse of the service from breakdown almost impossible.

The company's telephone business has grown so that it has been obliged to withdraw from public hacking, and now vehicles are supplied on call only from its main station and five stands. It is intended to devote considerable attention to delivery service for the stores, using under-loading wagons, as soon as facilities permit.

The automobile show which it was intended to hold in Boston March 4 to 9, has been abandoned. It was found on canvassing the manufacturers that the general sentiment was opposed to a show there this spring.

The Long Island Endurance Test.

It has been decided to hold the 100-mile endurance contest, originally projected by the Long Island Automobile Club, early in April instead of the latter part of this month. The change, it is thought, will enable the committee to announce the day of the test two weeks in advance. The event will be a non-stop test pure and simple, which all vehicles of whatever motive power will enter on an equal footing, and in which the machine covering the course with the least loss of time in stops will carry off the honors. In connection with the run will take place a hill climbing contest, in which cups will be awarded to the steam, gasoline and electric machines making the best time. There will be no time limit in this latter contest, but any machine exceeding a speed of 15 miles an hour in the non-stop contest will be liable to disqualification.

Following are the revised rules in detail:

1. Classes.—For convenience in judging, motive powers will be divided into classes.

2. Speed Limit.—Maximum, 15 miles per hour.

3. Time Limit.—Full course must be covered within 12½ hours.

4. Judging.—(a) Contestants to be judged solely on the duration of stops, regardless of cause. (See Instructions No. 14.) (b) There will be three Judges for each class, each group to be composed of one member of the Board of Governors of the Long Island Automobile Club, one from some other recognized automobile club, and one member of the Press. These Judges are to have no entries or interest in the class in which they are judging.

5. Operation.—There will be no restriction as to operators of vehicles. Carriages may be operated by either amateurs or professionals, but no change of operators will be allowed after being started.

6. Timing.—Time-keepers for each vehicle will be assigned by the Committee. (See instruction to time-keepers.)

7. Computation of Time.—500 minutes has been adopted by the Committee as a basis for computation. Time must be taken by the time-keepers from the actual stop to the actual start of the wheels. The total time will be deducted from the unit (500 minutes) from which the percentage of efficiency will be calculated.

8. Course (100 miles).—To be over macadamized roads on Long Island, including grades, levels, etc.; no retracing; exact route, depending on the condition of the roads, will be published at least two weeks prior to the contest.

9. Reduction of Speed.—The speed in passing through villages and towns must be reduced to a limit of 8 miles per hour, in compliance with legal requirements.

10. Supplies and Battery Relays.—All contestants are to provide their own fuel, water and battery relays. Vehicles must be stopped when taking on supplies or refilling tanks.

11. Hill-Climbing Contest.—Location, grade, length of hill and conditions governing contest to be announced on day of test. A cup to be awarded to the winner in each of the three classes.

12. Entrance Fee.—An entrance fee of $10.00 to be posted for each vehicle entered.

13. Class of Vehicles.—Entries must be confined to self-propelled vehicles, so constructed that at least two passengers are carried seated side by side. All vehicles entered must carry the full complement of passengers.

14. Character of Stops Not Timed.—No time will be charged against a vehicle for stops made in compliance with the requirements of personal or public safety. (See copy of Rules issued herewith.)

15. Awards.—All vehicles completing the contest within the time limits named below will be entitled to an engraved certificate, showing their exact standing in the competition, and divided into classes as follows (certificates and seals to carry ribbons of corresponding colors):

Per Cent.	Class. Ribbon.	Maximum duration of stops. Min.	Per Cent.	Class. Ribbon.	Maximum duration of stops. Min.
100	Blue	0	90	V. H. C.	50
99	Red	5	89	"	55
98	"	10	88	"	60
97	Yellow	15	87	"	65
96	"	20	86	"	70
95	"	25	85	H. C.	75
94	White	30	84	"	80
93	"	35	83	"	85
92	"	40	82	"	90
91	"	45	81	"	95
			80	"	100

Note.—V. H. C., Very Highly Commended; H. C., Highly Commended.

16. For entry blanks, information, etc., application should be made to Mr. Charles W. Spurr, Secretary, 552 State Street, Brooklyn, N. Y.

RULES GOVERNING TIME-KEEPERS.

Each time-keeper will be provided with a schedule card on which is to be entered by him in detail the length and character of all stops, giving the actual time of start, duration of each stop and time of completion of full course. Each time-keeper to compare his watch with those of the Judges immediately before and after the contest.

Vehicles must be stopped when taking on supplies, either fuel, water or battery relays, and must be stopped when refilling tanks from detached containers.

Time-keepers and passengers can assist the driver only when the vehicle is stopped and the time penalty is being enforced. This means that the driver cannot relinquish even the steering apparatus to another while giving any attention to the carriage, such as replenishing water, making repairs, etc., while running. All stops must be timed irrespective of cause, and the cause shown on the schedule by the time-keeper. Stops by reason of the demands of personal or public safety must be timed, but will not be counted against the vehicle; but it must be understood that no attention can be given the vehicle during the duration of said stops, and the vehicle must proceed as soon as the cause for stop has ceased.

The committee in charge is as follows: L. R. Adams, president, and chairman of contests and exhibitions committee; H. B. Fullerton, chairman of good roads committee; H. S. Chapin, chairman of runs and tours committee; F. W. Tousey, R. E. Jarrige and J. E. Savell, members of the contests and exhibitions committee; F. G. Webb, chairman of technical committee; C. W. Spurr, Robert Darling and A. R. Pardington.

More About the "Mercedes" Racer.

The following additional particulars regarding the "Mercedes" racing machine, illustrated in our last issue, have been furnished by the Daimler Mfg. Co., of Steinway, L. I.:

The particulars given last month as to weight and power are stated to be correct. The cylinder dimensions of the motor are approximately 5 by 6 inches, the stroke being a little shorter in proportion than in the usual Daimler models, for the sake of obtaining the utmost power on a given weight, even at some sacrifice of fuel economy. The normal speed of the motor is about 750 r. p. m., at which speed it delivers some 32 h.p., but in a "brush" it can be speeded up to 900 revolutions, at which it will deliver 39.4 h.p. at the shaft. At the latter speed of the motor, the machine is stated to make 120 kilom. (74½ miles) an hour.

The ignition, instead of being by jump spark, as in most automobile engines, is by make and break, with snap cams and a variable lead controlled by the governor. The magnalium employed last year has been replaced by an alloy of aluminum, zinc, and iron, stated to have a tensile strength of 40,000 lbs. per square inch, or equal to the best bronze. The connecting rods, and in fact all possible working parts, are of drop-forged steel.

Aside from its extreme lightness, the feature of especial interest in the motor is its method of regulation. All previous Daimler motors have governed by leaving the exhaust valves of one or more cylinders shut, thus compressing the contained gases during the exhaust stroke, and re-expanding them on what would normally be the suction stroke, while the suction-lifted inlet valves remain closed. In the Mercedes, the exhaust valve mechanism is exactly duplicated on the inlet side, and the governor acts by leaving the inlet valve or valves shut, precisely as in the old model by leaving the exhaust valve shut. This, on the suction stroke, would naturally result in a partial vacuum in the cylinder, and perhaps in one or the other valve being sucked open in spite of its heavy spring. To prevent this, an inwardly opening relief valve is put in the head directly over the inlet valve, and this, being sucked open, admits a charge of pure air into the cylinder. On the succeeding strokes this air is compressed, re-expanded, and then exhausted, to be followed by another, so that in a few strokes the cylinder is wholly scavenged of burnt gas. It has been found by test that the first power stroke after this scavenging is materially stronger than when the burnt gases are entrapped as in the old model. So fully convinced is the American Daimler Mfg. Co. of the value of this improvement that they are about to introduce it on all of their motors, for both vehicles and boats.

The principal framing of the machine is of channel steel, and the wheels are about 32 or 34 inches in diameter, with 5-inch tires. Four speeds, of which the first or slowest is 16 miles an hour, and a slow reverse, are used, substantially as in the Daimler delivery wagon: but, instead of employing three levers to operate them, a single lever at the driver's right hand, shifting transversely on a short shaft, controls according to its lateral position the first and second speeds, the third and fourth, or the reverse. The same lever, which of course is neutral in its vertical position, disconnects the clutch with each change of speed; and whichever two "shifters" are not in use are automatically locked when the lever leaves them to act on the third.

There are three separate braking systems; one on the lower or intermediate shaft of the gear case, as in the delivery wagon, one on the differential in the countershaft, and a pair of bands on the rear sprocket wheels. The last are effective in either direction and are operated by a hand lever adjacent to the speed lever, while the other two brakes are applied by pedals. As a conical clutch, when the lowest speed is so high as in this case, is apt to start the machine with a good deal of a jerk, it has been discarded in the "Mercedes" for an expanding ring friction clutch, of principle similar to those used on most American machines.

Lower Prices in France.

Panhard-Levassor have recently seen their way clear to lower the prices on their machine—except the racers—as follows: The 12-horse-power cars, from 22,000 to 15,600 francs; the 8 horse-power from 15,500 to 11,600 francs; and the 6 horse-power from 10,500 to 7,650 francs. This action on the part of the largest automobile building concern in France has naturally caused something of a stir, and it is freely predicted that with the expansion of business and cheapening of the cost of manufacture there will soon be a reduction in price all around.

The American Roller Bearing Co., which originally confined itself chiefly to automobile bearings, has of late entered other fields as well, notably heavy delivery wagon and truck work. In the last few months it has booked orders for bearings for ore cars, gun carriages, trucks and vans, automobile carriages and wagons, shafting, motor and engine bearings, electric car bearings, etc. The company will also furnish wheels complete with roller-bearing hubs to automobile builders, these including also driving wheels to be keyed to axle. A year's guarantee is given with every bearing.

The International Cup Race.

According to report, the international race for the Gordon-Bennett cup has been fixed for May 29. In addition to the four 50-h.p. Napiers, a fifth English machine will be entered by the Motor Mfg. Co., and a trial race will be run to select three of the five. Germany also has five machines, three Mercedes Daimlers, one Benz, and one Canello-Durkopp, and a trial race will be run between these likewise.

The Paris Exposition.

The Paris Automobile and Cycle Show, held from Jan. 21 to Feb. 2, was undoubtedly the largest of its kind yet held. Aside from bicycles, sundries and publications devoted to the industry, the exhibits of automobiles are reported to have comprised 432 voitures, light voitures and voiturettes, 28 buses, cabs and motor wagons, 111 motocycles, 4 delivery tricycles and 52 running gears, besides ten power launches—a total of 637. The attendance on the opening day numbered 46,000, and the number of exhibitors was 550. Among the visitors were some of the highest officials of the Republic.

The Chicago Show.

A number of prominent manufacturers will exhibit at the automobile show in Chicago, March 23d to 30th, under the auspices of the "Motor Age." Among these are the Mobile Co., Woods Motor Vehicle Co., the National Automobile & Electric Co., De Dion-Bouton Motorette Co., Milwaukee Automobile Co., Waltham Mfg. Co., E. R. Thomas Motor Co., etc. The show will be held in the Chicago Coliseum, where there is ample floor space, and reduced rates have been granted for the show by most of the roads in the Middle and Southwestern states.

The Stratton Motor Bicycle.

The accompanying illustration shows the motor bicycle made by the Stratton Motor Bicycle Co., whose office is at 7 Wall St., New York. The especial feature of this machine is that all the propelling mechanism and tanks are contained in the forward triangle of the frame, thus giving a neat appearance to the machine. The battery cells are in the upper part of the triangular case above the motor. The spark coil is just below them, and the gasoline is in a separate compartment at the bottom of the case. The machine is said to weigh 75 pounds.

A New H-C Igniter.

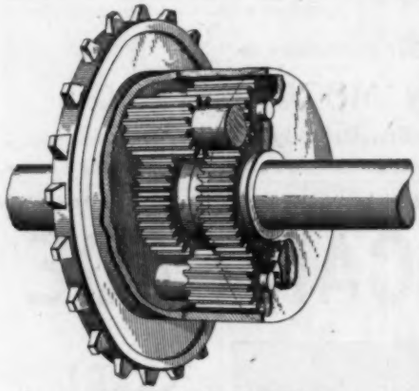
The Holtzer-Cabot Electric Co., Boston, Mass., have produced a new size of magneto generator for automobile igniters. It is on the same lines as their other machines, but is intended for use where a specially small machine is required. It

NEW H-C IGNITER.

weighs fourteen pounds, and its dimensions are 4⅝ inches high, 9 inches long, and 7 inches wide. The base is 8¼ by 6 inches. The armature is enclosed and dust proof

Steam Carriage Parts and Drawings.

The Peerless Long Distance Steam Carriage Co., Washington, D. C., are supplying castings, forgings and working drawings for a compound carriage engine, at moderate prices. They sup-



DIFFERENTIAL GEAR.

ply kerosene burners, spur differential gears, and running gears also, with drawings from which small shop proprietors can construct their own automobiles. The cut shows the arrangement of the differential gear.

Roller Bearing Tests.

The American Roller Bearing Co., of Boston, Mass., makers of roller bearings for automobiles and general purposes, report the following series of tests with a bearing for a 1¾-inch shaft: At 10,000 revolutions per minute the bearing remained cold; at 21,000 revolutions it was still cold, and at 33,000 revolutions it was as warm as one's hand only. At 50,000 revolutions it was too hot to touch, and at 65,000 revolutions it stopped, owing to expansion. Apparently the speed of 33,000 revolutions was a safe one for an indefinite time. During these tests the bearing was dry and clean, having been washed with gasoline just before testing.

The Automobile and Cycle Parts Co.

The above-named company, with an authorized capital of $5,000,000, has been organized in Cleveland, O., and has purchased from the American Bicycle Co. the following properties:

The saddle factory at Elyria, Ohio, formerly operated by The Garford Mfg. Co; the saddle factory at Westboro, Mass., formerly operated by The Hunt Mfg. Co.; the steel stampings factory at Milwaukee, Wis., formerly operated by C. J. Smith & Sons; the steel stampings factory at Chicago, Ill., formerly operated by The George L. Thompson Co.; the chain factory at Indianapolis, Ind., formerly operated by The Indianapolis Chain & Stamping Co.; the ball company at Cleveland, formerly operated by The Cleveland Machine Screw Company; the pedal factory at Cleveland, Ohio, formerly operated by the White Sewing Machine Company; the sheet-steel factory at Chicago, Ill., formerly operated by Hart & Cooley.

The officers are as follows: President, A. L. Garford, Elyria, Ohio; Vice-President, M. B. Johnson, Cleveland, Ohio; Treasurer, F. N. Smith, Elyria, Ohio; Secretary, F. E. Lytle, Cleveland, Ohio. Mr. Johnson was also chosen to act as chairman of the executive board.

The directors are as follows: A. L. Garford, J. D. Cline, Windsor T. White, M. B. Johnson, E. H. Bourne and J. C. Hill.

All of the properties purchased are among the leaders of their kind, and it is the intention, in addition to the manufacture of cycle parts, to go quite heavily into the manufacture of small parts for automobile work, supplying builders much more cheaply than they can manufacture for themselves. Tubular running gear is another branch which the company proposes to enter. The company's office will be in the American Trust Bldg., Cleveland, O.

Business News.

Chas. E. Miller, dealer in automobile parts and sundries, is located on the first floor of 99-101 Reade St., N. Y., not on the top floor, as was stated in the February issue.

The Rochester Cycle Mfg. Co., Rochester, N. Y., are making steam carriage engines, seamless-drawn boilers, and gasoline burners. They are building also steam carriages complete.

Woods, Waring & Co., 21 Van Buren St., Chicago, who have taken up the construction of the Clinton E. Woods electric automobiles, have issued a good-sized catalogue, describing and illustrating the several designs.

The National Automobile & Electric Co., Indianapolis, Ind., has just issued a very handsome catalogue showing their electric pleasure vehicles and combination delivery wagon and break. They will send the catalogue to any address for 10 cents in stamps.

The Trinity Cycle Mfg. Co., of Keene, N. H., has sold its plant and business to the Steamobile Company of America. Mr. E. P. Wells is the President and Manager of the new company, which was recently incorporated with an authorized capital of $500,000, $150,000 of which was paid in.

A water column with two electric signals, one for high and one for low water, is made by F. H. Quimby, Troy, N. Y. The column has the usual three-gauge cocks, but contains also two automatic electric contacts by which two bells of different tones are rung according as the water is high or low.

Users of motor vehicles will be interested in a neat pamphlet recently issued by the Joseph Dixon Crucible Co., Jersey City, N. J., entitled "Graphite As a Lubricant." In this pamphlet are brought together a number of reports on lubrication tests in which graphite figures, together with a great variety of uses to which graphite may be put, and a number of testimonials and other letters. Pure graphite has solved many difficult problems in lubrication, and will doubtless solve many more. The Jos. Dixon Co. will send the pamphlet to any one for the asking.

The E. R. Thomas Co., Buffalo, N. Y., makers of the "Autocrat" line of motocycles, made a hit at the New York and Philadelphia shows by allowing many novices, who had hidden bicycles but never motor bicycles, to ride the "Auto-Bi" around the track. As a demonstration of the machine's simplicity it was very effective. An important improvement in the latest design of the "Auto-Bi" is in making the lubrication of the motor automatic, which stops when the motor stops. Other improvements also have been added in strengthening the frame and forks, simplifying the ignition circuit, enlarging the oil and fuel tanks, etc.

Patents.

List of Automobile patents granted during month of February.

666,307—Motor vehicle. Issued to J. W. Farnoff.
666,554—Motor vehicle. Issued to Pettee & McCutchan.
666,440—Motor vehicle. Issued to G. L. Reenstierna.
666,308—Motor vehicle steering mechanism. Issued to J. W. Farnoff.
666,956—Electric connecting handle for automobiles. Issued to E. N. Dickerson.
666,739—Motor vehicle. Issued to W. F. Davis.
666,775—Vehicle propelling mechanism. Issued to G. B. Nussbaum.
666,773—Vehicle steering mechanism. Issued to P. Neu.
667,487—Vaporizer. Issued to F. P. Boland.
667,189—Motor vehicle battery box or tray. Issued to G. H. Condict.
667,792—Hydrocarbon engine igniting device. Issued to J. W. Packard.
667,910—Explosive engine mixer and vaporizer. Issued to Hatcher & Packard.
668,075—Explosive engine piston. Issued to W. O. Worth.
667,908—Explosive engine speed regulator. Issued to W. A. Hatcher.
668,111—Explosion and combustion motor. Issued to W. Maybach.
667,846—Explosion engine or motor. Issued to S. Miller.
668,000—Motor vehicle attachment. Issued to B. E. Dakin.
667,909—Motor vehicle frame. Issued to Hatcher & Packard.
667,911—Motor vehicle. Issued to W. A. Hatcher.
668,073—Motor vehicle. Issued to W. O. Worth.
668,074—Motor vehicle. Issued to W. O. Worth.
667,842—Vehicle steering mechanism. Issued to H. S. Ingalls.

Orient Runabout
"Yes"
comments the calamity croaker, "an automobile is a good thing—in spots. But when it takes ten minutes to get under way for a five-minute trip, and I have to share my wolf robe with an iron bar, even the good spots disappear."
He must have failed to investigate the quick response of hydro-carbon gas or the original lever construction of the Orient Runabout. All such should send for our circulars.
WALTHAM MFG. CO., WALTHAM, MASS.

Automobile Bargains

We have a choice selection of steam, gasoline and electric automobiles in fine condition, at prices ranging from $400 up.

Send for our price list before purchasing elsewhere. **DuBois' Automobile Agency,**
220 Broadway, New York

Automobile and Coach Lamps

of every description

Write for catalogue and prices

THE STEVENS & SACKETT CO.
New Haven, Conn.

Books for Automobilists

Sent post-paid on receipt of price by
THE AUTOMOBILE,
150 Nassau Street, New York

Small Engines and Boilers.

By EGBERT P. WATSON.

12mo., cloth, 30 full-page working drawings Price, $1.25.

Catalogue of electrical books for the asking.
THE AUTOMOBILE, 150 Nassau St., New York.

"Bevin" Automobile Bell

Two Sizes 3 and 5 in.

Unique in Construction. Most Pleasing in Tone. Easily Attached to Any Vehicle. Insist on Having the Right Thing.

FOR SALE BY ALL DEALERS.

For Sale by
Hartley & Graham
313 Broadway
New York City

Bevin Bros. Manufacturing Co.
East Hampton, Conn.

De Dion-Bouton Motorette Company

Sole United States Agents and Licensed Manufacturers for DE DION-BOUTON CO. of France

Our Surrey supplies the growing demand for a family motorette to seat three or four. It combines **elegance** and **comfort** with **power** enough to attain high speeds and to climb steep grades.

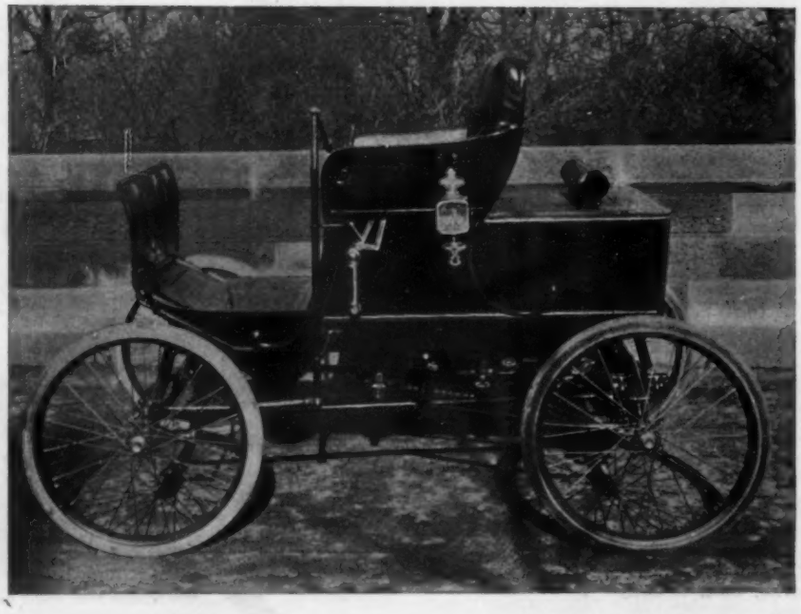
Write for further particulars to

DE DION-BOUTON MOTORETTE CO.
Church Lane and 37th St., Brooklyn, New York

"READING" STEAM CARRIAGE

STRONG! SPEEDY!

Every desirable feature in a Steam Carriage has been covered. 32-gallon Water Capacity; 8-gallon Gasoline; 30-inch Wheels; Side or Centre Steering; Long Wheel Base; Proper Lubrication; 60 feet Heating Surface in Boiler.



SAFE! SIMPLE!

Gasoline controlled from Seat.

Auxiliary Throttle; Auxiliary Hand Pump; Adequate Engine Water Pump; Pilot Light; Flexible Running Gear; Automatic Fire Control.

Weight charged, 950 lbs.

PRICE, - - $800.00

THE STEAM VEHICLE CO. OF AMERICA, 253 Broadway, New York

London Agent, JOHN L. SARDY, Saracen Chambers, Snow Hill, London, E. C.

WINTON

It represents advanced ideas in Automobile building.

Successfully operated throughout all seasons.

The **Waiting List** is growing. Place order and avoid inconvenience which will result from delay.

The Winton Motor Carriage Co.

Eastern Depot
150 152 E. 58th St., New York

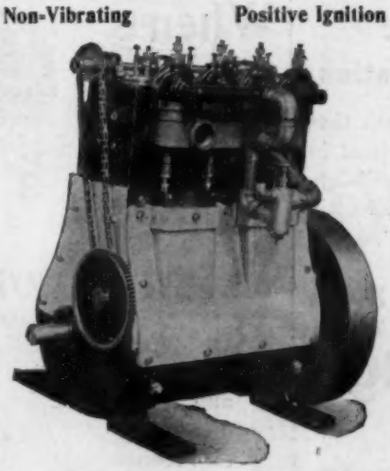
489 Belden Street
CLEVELAND, OHIO

6½ B. H. P.

Four-Cylinder Vehicle Engine

150 to 1500 Revolutions per Minute

Non-Vibrating Positive Ignition



Type A. Vertical Type B. Horizontal

Sold under a guarantee
Write for Prices and Description

Motor Vehicle Power Company

1227 Spring Garden St., Philadelphia, Pa.
New York Office, 62 Gold St.

National Automobiles

The Factory Behind the Vehicle

This simply means that we are building "The National" in a factory built for the express purpose of producing high grade, mechanically perfect vehicles, and not in a converted shop, or make-shift, that merely assembles parts. There are very few complete Automobile plants in the world. The National is one of them.

The National line embraces Combination Wagons, Stanhopes, Breaks, Park Traps, Road Wagons and Run Abouts; all driven by electric power, and ranging in price from $900 to $1750.

It is our policy to establish agencies in every important center, and we invite correspondence from parties having capital and suitable facilities for the proper conduct of the business.

Send 10c. in stamps for the handsomest and most complete "Auto Book" ever published on the subject of Automobiles.

National Automobile and Electric Co.

1005 East 22nd St., Indianapolis, Ind.

Roger B. McMullen & Co., Chicago, Ill., Gen'l Sales Agts. for U.S. and Canada

Illustrated pamphlet mailed free to any address.

The Oldsmobile

is a marvel to most people

It is only a simple fact however

Runs 40 miles on one gallon of gasoline

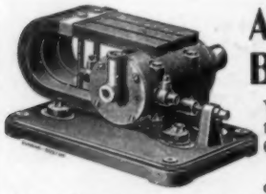
Starts at will from seat. Fully guaranteed

OLDS MOTOR WORKS 55 Concord Ave. Detroit, Mich.

HERALD SQUARE AUTOMOBILE EXCHANGE

Permanent Exhibition Space and Storage
For Manufacturers
Vehicles repaired and supplied with every requisite

147, 149, 151
WEST 35TH STREET
NEW YORK CITY



A FREE BOOKLET

Valuable to all interested in Gas or Gasoline Engines. Full descriptions of the best methods of ignition in this class of motors.

Describes apparatus best adapted for use in connection with automobiles.

Send for a copy. It may save you much annoyance and expense.

The Holtzer-Cabot Electric Co.
BOSTON (Brookline), Mass.

Steam Steam Steam

Engines, Boilers,

and Fittings. A complete line including Automatics, Gauges, Pin Valves, Safety Glass Gauges, etc., etc.

SEND FOR CATALOG.

Locke Regulator Co., Salem, Mass.

THE LIFE OF AN AUTOMOBILE.

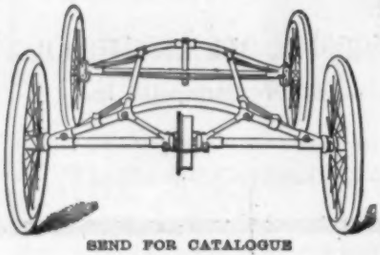
The easy working of the parts and the comfort of the driver
Largely Depends Upon Perfect Lubrication.

Dixon's Pure Flake Graphite Is the only lubricant that can withstand the heat in a gas-engine cylinder. Pure flake graphite perfectly lubricates motor cylinders and all working parts. We prepare Special Lubricants for Gears of Electric Motors and Special Lubricants for Chains of Motor Vehicles. *Correspondence solicited.* Samples free to responsible parties.

JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

Automobile Frame Fittings

AND COMPLETE GEARS



SEND FOR CATALOGUE

STEEL CASTINGS and FORGINGS in the Rough or Machined . . . .

HUBS, RIMS, SPOKES, SPRINGS and BODIES

Workings Drawings Furnished

B. V. COVERT, Lockport, N. Y.

Portable Rheostats

which enable you to charge your storage batteries from any Edison station or trolley station, while touring.

Also equipments for private stables and for charging stables.

The Cutler-Hammer Mfg. Co.
Westfield, N. J.

Voltmeters

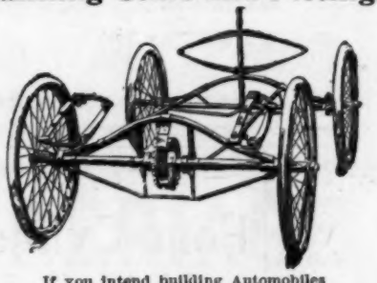
for testing storage batteries.

Volt-Ammeters

for testing primary batteries. Indispensible for ascertaining the condition of batteries.

L. M. PIGNOLET, 78 Cortlandt St., N. Y.

Running Gears and Fittings



If you intend building Automobiles Write for our descriptive circular....
A. W. Dolfini & Co., 322 Classon Av., Brooklyn, N.Y.

When You Tire of Riding In an Automobile

try a trip across the continent. But be sure you go via the Denver and Rio Grande in one or both directions. All the finest mountain scenery in America is on the line of this road.

Write to

H. E. TUPPER, Gen. Agt., 353 Broadway, New York, or to S. K. HOOPER, G. P. A., Denver, Colo. for advertising matter.

JUMP SPARK COIL

the BEST gas engine igniter. Acknowledged to be the most up-to-date method.

Electrical Specialties.

Electric Power—Lundell Motors

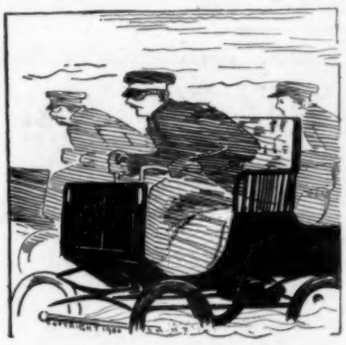
FOR AUTOMOBILES

The Lundell Octagon Motors give an automobile service of the highest order. They are the simplest, safest and most desirable from all standpoints. These motors are designed especially for electric vehicles and are fully described in our Bulletin No. 20417. Send for a copy.

SPRAGUE ELECTRIC COMPANY

NEW YORK.

CHICAGO. BOSTON. ST. LOUIS. BALTIMORE.



Do you know how to dress your automobile servants?

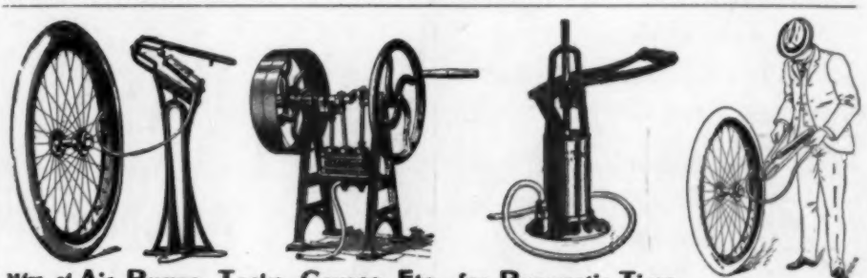
Or:—

How to dress correctly and comfortably yourself when running an automobile?

Perhaps we can help you.

Rogers, Peet & Company,

258, 569, 1260 Broadway,
New York



Mfrs. of Air Pumps, Tanks, Gauges, Etc., for Pneumatic Tires.

SEND FOR ILLUSTRATED BOOKLET.

Gleason-Peters Air Pump Co., 181-189 Mercer Street, New York, N. Y.

Seamless Steel Boiler and Tanks

Patent Pilot Light, holding Steam indefinitely. Brake holding either forward or backwark. Water Indicator on Tank. Cut-off at Steam Chest. Leather Dash instead of Wood. Acetylene Lamps instead of Oil or Candle.

The Milwaukee

Stanhope,	$ 750
Surrey,	1,000
Delivery Wagon,	1,000

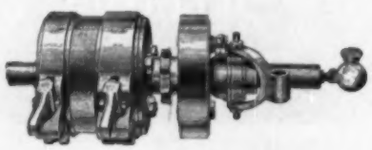
Milwaukee Automobile Co

MILWAUKEE, WIS.

UPTON TRANSMISSION GEAR

WHAT gear are you using or propose to use in your automobile? The selection of a gear is as important as the carriage itself. A good gear is indispensable. The best will save you much worry and expense and give your vehicle the proper speed. There are many gears, but there is only one perfect gear made.

The Upton Gear



is a compact, neat, strong, powerful and efficient gear for any kind of gasoline, steam or electric motor vehicles. It is the only gear that is

ABSOLUTELY DUST PROOF

It has two speeds and reverse. No shocks. Change of speed by brakes. Speed ratio may be arranged at will.

Examine, test it and you'll have no other gear but the Upton.

Two Sizes—No. 1, 4 to 5 HP., 35 lbs. No. 2, 7 to 8 HP., 43 lbs.

Orders promptly filled. Write for circulars and prices to

Works at Beverly, Mass. **UPTON MACHINE CO., 17 State St., New York**

Phineas Jones & Co.

Reputation International

All Kinds of Wood Wheels

For Automobiles

Established 1855 **Kelly Springfield Tire Used.** **Newark, N. J.**

American Automobile Gauges and Pop Valves

Simple
Accurate
Durable

used by the leading manufacturers Specify the American and get the Best

Write for Prices.

Manufactured only by

American Steam Gauge Co., Boston

NEW YORK CHICAGO

AUTOMOBILES

STEAM
GASOLINE
ELECTRIC

Bought, Sold, Exchanged

Stored and Repaired

Accessories of all kinds furnished. Expert repairmen constantly on duty. Bargains in slightly used automobiles, steam, gasoline and electric constantly on hand.

MANUFACTURERS' AGENTS

For the sale of all makes of Automobiles

Automobile Exchange and Storage Co.

133, 135, 137 & 139 West 38th Street, N. Y.

TWO DOORS FROM BROADWAY

DIAMOND TIRES

ARE

RELIABLE TIRES

AUTOMOBILES
BIKE WAGONS
BICYCLES

The Diamond Rubber Co.

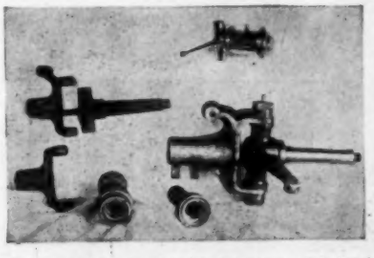
Factories, AKRON, O.

BRANCHES.

215 West 53rd Street,	New York City.
7½ Appleton Street,	Boston, Mass.
431 Wabash Avenue,	Chicago, Ill.
9 W. Seneca Street,	Buffalo, N. Y.
435 N. Broad Street,	Philadelphia, Pa.

GEARS GEARS GEARS

We are now prepared to furnish promptly light running gears complete, also frame fittings in the rough and machined



THE CONRAD MOTOR CARRIAGE COMPANY

DeWitt & Bradley Sts., Buffalo, N. Y.

Highest Award
Automobile Bearings
Paris, 1900

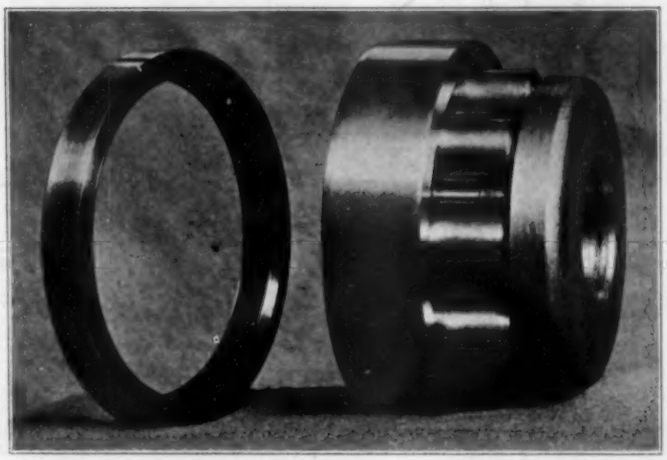
A R B

Highest Award
Nat'l Export Exposition
Phi.ade phia, 1899

ROLLER BEARING AXLE

COMBINED JOURNAL AND THRUST BEARING.

Single Bearings for Automobile Driving Axles, Motor Bearings Etc.



Wheels Complete with Roller Bearing Hubs Built According to Specifications

SINGLE BEARING,
showing outer race partially withdrawn, and bevel thrust ring.

We give a Year's Guarantee on Every Bearing, Covering Defects of Breakage or Wear

European Bra..ch
17 Soho Square
London, England

AMERICAN ROLLER BEARING COMPANY
Offices and Factory, 32-40 Binford St., - Boston, Mass.

Visit us at
Pan-American Exp'n
Buffalo, 1901

"TRIUMPH"

AUTOMOBILES

"ALL THEIR NAME IMPLIES"

Electric Steam Gasoline

We are prepared to accept orders for our Electric Stanhope for Delivery in Sixty Days. Gasoline or Steam Vehicles for Ninety Days Delivery . .

SEND FOR DESCRIPTIVE CIRCULAR
(Mention this Paper.)

TRIUMPH MOTOR VEHICLE COMPANY

1012-1013 MONADNOCK BLDG., CHICAGO.

For Business "Riker" Automobiles For Pleasure

Branches

H. M. LIPPINCOTT
Stephen Girard Bldg.
Philadelphia, Pa.

DETROIT RIKER AUTOMOBILE CO.
253 Woodward Ave.
Detroit, Mich.

MOTOR CYCLE AND VEHICLE CO.
Washington, D. C.

20-PASSENGER OMNIBUS.

Branches

FRED. WARD & SON
48 Fremont St.
San Francisco, Cal.

APGAR & DICKINSON
135 East State St.
Trenton, N. J.

EDWARD GUNSTER
Wilkesbarre, Pa.

Main Office and Works
Elizabethport, N. J.
U. S. A.

Riker Motor Vehicle Co.

New York Office, Salesroom, Storage and Repair Station
104-106 W. 39th St.

Columbia AUTOMOBILES

ELECTRIC GASOLINE

Now in the Sixth Year of Service

To those contemplating the purchase of an automobile, the reputation of a company, which has been longest in the field of American manufacture, and which has the largest number of motor vehicles in successful operation, must appeal as an argument more substantial than a recital of claims unsupported by practical tests and actual operation. Th s record of manufacture and sales has been reached with the Columbia Automobile.

Where current cannot be conveniently supplied, we are prepared to furnish estimates for, and erect when desired, simple and automatic plants for charging electric vehicles.

MARK III. COLUMBIA PHAETON.

This vehicle is one of the most popular styles of Columbia Automobiles. Besides being in demand for park and general pleasure riding, it is especially adapted for physicians, in the professional service of whom a large number of these vehicles are used. The top, when raised, forms an ample protection against inclement weather. The mileage capacity on one charge of standard batteries is 40, and speeds of 3, 6 and 12 miles per hour can be attained. Accommodations are provided for two passengers, and an attendant in the rear.

Electric Vehicle Company Hartford, Connecticut